Structural Equation Model of Father Involvement in Infant Development in Vietnam using Identity Theory

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Submitted in partial fulfillment

of the requirements for the degree of

Master of Science in Applied Health Sciences

(Health Sciences)

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Abstract

Child development is an important determinant of global health, and fathers' involvement can enhance child behavioural, social, and cognitive development. However, fathers' involvement varies between cultures, and research on fatherhood in Asia is limited, especially in developing countries such as Vietnam.

The aim of this study was to examine fathers' involvement using identity theory including the following constructs: fathers' affective and interactional commitment, psychological centrality and role performance. In addition, socioeconomic status and marital relationship quality were examined in the context of the fathers' involvement. Ultimately, the influence of the fathers' involvement on infants' developmental outcomes was analyzed.

To achieve the objectives of the study, control group (N = 370) data from a longitudinal father involvement intervention study in Vietnam was used. Indicators of the fathers' role performance and child development were examined using structural equation modeling.

Psychological centrality was strongly positively associated with the role performance and infants' development. Furthermore, marital relationship quality predicted the fathers' psychological centrality and role performance.

These findings suggest that fathers' emotional relationship with their spouses and infants and the centrality of the father's role identity to a man has a significant influence on the fathers' involvement and infants' development. The present study contributes to understanding of the factors that affect fathers' involvement and infants' development in the Asian context.

In addition, the present study provides support to development and implementation of social programs aiming to increase fathers' involvement in Vietnam and globally.

Keywords: father involvement, infant development, identity theory, global health, structural equation model

Acknowledgements

I would like to thank my thesis supervisor, Dr. Lynn Rempel, for her invaluable academic guidance and continuous encouragement. I am truly grateful for her insight, feedback, and support with all of my endeavors throughout my master's program.

I would also like to thank my thesis committee members, Dr. Phil Wilson and Dr. Lynn McCleary, for their encouragement and insightful suggestions. I am grateful to Dr. Phil Wilson for his dedication to statistical mentorship, and for a great amount of help with structural equation modeling. I am thankful to Dr. Lynn McCleary for always having an insightful perspective on my work. I would like to thank my external examiner, Dr. Dawn Zinga, for her feedback and valuable suggestions.

I would like to acknowledge and thank Dr. John Rempel at St. Jerome's University for his assistance with the data analysis.

I am honoured to have been affiliated with the Centre for Pedagogical Innovation. I would like to offer a special thank you to all of the members of this centre for providing me an opportunity to gain experience in facilitating teaching assistant development workshops.

I have had a pleasure of collaborating with Niagara Region Public Health as a part of my Master's program. I would like to thank all of the epidemiologists in the public health department for sharing their statistical expertise.

Lastly, I would like to offer my deepest gratitude to my family for their love, support, and encouragement.

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Chapter 1 - Introduction

Background of the Problem

A number of studies have documented the positive effects of paternal involvement on child development (Amato & Fowler, 2002; Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Lamb, 2012; Pleck, 2010). Considering social changes such as the increase in women's labor force participation and increases in divorce, there has been increasing interest in the value of father involvement. However, specific factors that influence the level of the father's involvement are not yet sufficiently understood. The majority of the research has focused on the importance of the fathers' demographic characteristics (level of education, employment status, race) (Coley & Chase-Lansdale, 1999; King, Harris, & Heard, 2004) and marital relationship quality with child's mother (Gibson-Davis, 2008; Lee & Doherty, 2007), whereas fathers' psychological characteristics, such as their father identity and its relation to the paternal involvement has received much less attention. Several studies have analyzed mothers' perceptions and attitudes toward fathers' involvement (Barnett & Baruch, 1987), however, the role of the fathers' attitudes and attachment to the child and its relation to the fathers' behaviour have not been examined in detail.

In the 1960s, Stryker (1968) suggested analyzing the importance of identity and its influence on the variation in fathers' involvement. Identities can be defined through the various social statuses (e.g. father, husband, worker, friend) that determine the self (Stryker, 1968; Stryker & Serpe, 1994). In the present study identity theory was used to examine the association between fathers' psychological centrality, affective and interactional commitment, and fathers' involvement with

their child. Psychological centrality is comprised of the statuses or qualities that are central to the person's identity (Stryker, 1987). In this particular context psychological centrality was examined through the man's perception of the importance of his role as a father. Affective commitment represents the emotional connection to a role and attitudes toward a particular role (Stryker & Serpe, 1994). Interactional commitment is conceptualized as extensiveness or the number of social relationships that are connected to a particular role (Pasley, Futris, & Skinner, 2002). Finally, role performance represents the frequency of person's involvement in a given role (Pasley et al., 2002). Based on prior theoretical and empirical evidence, the original identity theory model was further developed, and it was adapted to be tested in the Asian context.

Capturing the complexity of the meanings of fathering has been problematic in a variety of disciplines for several decades (Fox & Bruce, 2001; Holden & Edwards, 1989; Lamb, 2012; Pleck, 2010). A particular issue involves questions about the intersection of culture and the roles of fathers in child development (Baumrind, 1991; Cabrera, Fitzgerald, Bradley, & Roggman, 2007; Richaud de Minzi, 2006). Effects of fathers' involvement in child development have been more extensively analyzed from the Western perspective, whereas few studies in Eastern cultures were devoted to this issue. Current research on fathers' involvement in Asian families suggests that fathers' involvement has dramatically changed in the past few decades. However, paternal research in Vietnam and other developing countries is quite limited. In the last century, Vietnam has experienced war, socialistic collectivization, reunification in political organization, and economic shift to a market-based economy (Jayakody & Phuong, 2013). As a result of the economic growth, Vietnam experienced global integration, and the effects of these economic and political changes have not been

examined in relation to life of the local families. As the society became more exposed to the Western ideology, individualistic lifestyle and more liberal views were adapted by the society, primarily in the urban areas (Huong, 2010). Therefore, it is important to examine the factors that affect fathers' involvement in Vietnam.

Research Purpose

The purpose of the thesis is twofold. First, it is the aim of this study to analyze the factors that affect fathers' involvement in Asian cultures using identity theory. The second aim is to obtain a better understanding of the fathers' role in infants' development.

Research Objectives

1. To test a theoretical model of fathers' involvement based on identity theory.
2. To analyze the factors that predict fathers' involvement and infants' development in Vietnam.

Research Hypotheses

Based on the proposed theoretical model derived from identity theory and relevant literature from the field of child development (Lee & Doherty, 2007; Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013), it is hypothesized that father's involvement in child development can be predicted through father's affective and interactional commitments and psychological centrality. Furthermore, it is hypothesized that father's involvement in its turn will predict child development.

Hypothesis 1: Fathers' affective commitment influences father's role performance directly and indirectly by affecting psychological centrality.

Fathers with positive attitudes toward their involvement with children and breastfeeding are more involved in their children's lives and in breastfeeding support (Holden & Edwards, 1989; Lee & Doherty, 2007).

Hypothesis 2: Fathers' interactional commitment influences fathers' psychological centrality.

Fathers' who have support from their social network are more attached to their infants (Brown & Lee 2011; Persad & Mensinger, 2008).

Hypothesis 3: Fathers' psychological centrality affects role performance.

Fathers' attachment to his infant (an indicator of the centrality of fathers' father identity) may have an influence on the actual involvement of fathers in their children's life (Lee & Doherty, 2007), and it may influence their involvement in breastfeeding support (Rempel & Rempel, 2011).

Hypothesis 4: Marital relationship quality affects fathers' role performance

Marital relationship can be a moderator of the relationship between fathers and children (Ihinger-Tallman, Pasley, & Buehler, 1993; Seltzer & Brandeth, 1994).

Hypothesis 5: Socioeconomic status of the family influences father's affective commitment.

Higher socioeconomic status is associated with more positive attitudes toward fathers' involvement (Blair, Wenk, & Hardesty, 1994).

Hypothesis 6: Fathers' psychological centrality affects their children development.

The level of the fathers' attachment to the child (Lamb, 1977) influences child developmental outcomes.

Hypothesis 7: Fathers' role performance affects their children development.

The frequency of the fathers' direct or indirect involvement with the child (Wilson & Prior, 2011) influences child developmental outcomes.

Chapter 2 – Literature Review

Fathers' Involvement

The effect of care on child development has been studied for several decades (Baruch & Barnett, 1981; Bowlby, 1951; Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Lamb, 1977; Mallan, Nothard, Thorpe, Nicholson, Wilson, Scuffham, & Daniels, 2014; Winnicott, 1964). Drawing concepts from developmental psychology and psychoanalysis, Bowlby (1951) formulated the "Attachment theory" that became seminal in the area of child development and attachment to mother. In the literature, child attachment to mother has found support as being important for the child development (Bowlby, 1951; Condon, Corkindale, & Boyce, 2008). In addition, a number of authors studied the importance of mother's attachment to the child, and found that maternal response behaviours to the child's attachment can affect child's feelings of safety (Bowlby, 1951; Condon, et al., 2008; Lamb, 1977). Furthermore, feelings of being safe and secure depend on mothers' care and the extent of the attachment that mothers demonstrate to their children.

Subsequently, a few researchers concentrated their attention on studying other figures of attachment, and particularly, on relationships between father and child (Baruch & Barnett, 1981; Lamb, 1977). Lamb (1977) was one of the first authors to show that fathers and mothers have equally important influence on the child's development. Fathers' attachment to infant can be described as an emotional bond to the child (Condon, et al., 2008). Braungart-Rieker, Zentall, Lickenbrock, Ekas, Oshio, and Planalp (2014) found that paternal affective and behavioural responses affect infant-father attachment. However, affective and cognitive processes that define the extent of paternal attachment to infant have not been sufficiently studied (Condon, et al., 2008).

The structures and functions of family are constantly changing, and in particular the role of fathers in a family life has dramatically changed in the past several decades (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Fox & Bruce, 2001; Holden & Edwards, 1989). Fathers' involvement can be affected by various factors including paternal and maternal attitudes toward fathers' involvement, support from family and friends, attachment to a child, socioeconomic status of the family, parents' employment status, structure of the family, and cultural differences (Cabrera et al., 2001). Under the impact of these various factors, responsibilities of men and women in a family can change, and as a result beliefs and expectations about fathers' and mothers' role can shift.

The father's role implies a number of behaviours in addition to taking care of a child; it also includes indirect care, or activities that fathers do for the child but not with the child, such as social or financial support of a child (Pleck, 2012). Social support could be in relation to supporting mother. According to Rempel and Rempel (2011), during the first year of child's life fathers perceive part of their role as supporting mothers' decisions about breastfeeding. Therefore, fathers' involvement should be examined from the perspectives of direct (father-infant interaction) and indirect (fathers' support of breastfeeding) involvement.

The importance of fathers' involvement has been demonstrated in a number of studies, where authors argued about the positive influence of fathers' involvement on child cognitive and physical development (Pougnet, Serbin, Stack, & Schwartzman, 2011; Wilson & Prior, 2011). In order to understand the underlying mechanisms that stimulate greater fathers' involvement, it is important to examine fathering attitudes, the importance of the support of fathers' social network and the importance of the fathers' attachment to a child.

Cultural Differences in Fathering: Vietnamese Culture

For the past 20 years, a number of studies were devoted to understanding the fathers' role in children development, and examined tendencies that are inherent to fathers despite the cultural differences, and in particular, fathers' interaction style that involves more physical play over care taking (Lamb, 1997; Lewis & Lamb, 2003; Shwalb, Shwalb, & Lamb, 2013). Fathers' roles are influenced by a number of factors including culture and traditions, social policies and politics. Parenting is in many different ways related to culture; depending on the character and hopes for the future generation, parents use various strategies when taking care of a child (Selin, 2014).

Shwalb et al. (2013) conducted a cross-cultural analysis of fathering, which was illustrated from an individual father's perspective and from the broader perspective of community. This approach allows examination of the influence of the policies of the government on fathering, and it provides an insight about the effect of the cultural peculiarities and traditions on fathers' role. Shwalb et al. (2013) suggested that, among East Asian fathers, most of the tendencies can be explained by social policies (e.g. One Child Policy in China) and urbanization, with a strong focus on the academic achievements of children; also modern Asian fathers tend to be more involved than those in previous generations. Shwalb et al. (2013) argued that Indian and Malaysian fathers can be characterized as distancing and authoritarian; African fathers assert their biology (genetics and evolution) and culture, and contribute to the well-being of all children in the community. American fathers, in contrast, are described as caregivers and open-minded people due to the prevalence of the freedom and equality values, level of immigration and diversity in an American society. European and Australian fathers in general tend to share responsibilities with mother

equally due to the flourishing of social policies that promote a dual-earner and dual-caregiver model (Shwalb et al., 2013).

While research on cultural differences is developing in European and American countries, cultural peculiarities of paternal involvement in Asian countries have not received adequate attention. Different historical events and social and economic circumstances can influence the roles of fathers in families (Jayakody & Phuong, 2013). In the last century, Vietnamese society experienced a number of important social and economic changes, however, the research about these changes and family outcomes is limited.

Comparing Vietnam to Western countries, one of the most important differences is the family system. While in North America, the nuclear family system predominates, in Vietnam, an extended family system continues to prevail (Jayakody & Phuong, 2013). For Vietnamese families, it is common to live with grandparents or close by, which may significantly affect the level of fathers' involvement in their children' life.

In addition, despite the development of policies on gender equality, attitudes toward fathers' roles and their level of involvement remain low in Vietnam. Jayakody and Phuong (2013) found differences in fathers' attitudes that were contingent on the geographical aspect: fathers in the north tend to believe that men should make important decisions in the family, whereas fathers in the south tend to accept that, when wives work, parents should share family responsibilities equally.

The promotion of breastfeeding in Vietnam commenced about 3 decades ago, and has been integrated into national programs of maternal and child health; however, overall achievement of national breastfeeding goals was lower than expected (Almroth, Arts, Nguyen Dinh, Pham ThiThuy, & Williams, 2008; Tran, Hoa, &

Malqvist, 2014). Almroth et al. (2008) examined community views about exclusive breastfeeding (EBF) in Vietnam, and found that such factors as poor knowledge of parents and health workers and marketing of infant formula affect mothers' decisions about breastfeeding. Furthermore, the importance of the breastfeeding support is crucial for both initiation and continuing the breastfeeding (Brown, & Davies, 2014). The role of the woman's partner in her breastfeeding decisions has not been analyzed sufficiently, especially in the Asian context. Therefore, it is important to examine the extent to which fathers' support of the breastfeeding affects mothers' decisions about initiation, exclusivity and continuity of the breastfeeding.

To summarize, fathers' role is very important during infancy, and factors that affect fathers' involvement have not been sufficiently studied, especially in developing countries such as Vietnam. In the present study identity theory was used to examine fathers' affective commitment and psychological centrality in regard to the role performance with consideration of additional factors including socioeconomic status of the family and marital relationship quality of the spouses. Ultimately, fathers' role performance was analyzed in the context of infants' development.

Theoretical Framework

Symbolic Interactionism and Identity Theory

One way of exploring the complexities of father involvement is through the lens of identity theory, a theory derived from symbolic interactionism. Symbolic interactionism was the principal theoretical framework for family studies in the 1920s and 1930s (when family studies were aiming to become a separate science), and it is one of the most popular perspectives in family studies today (Fox & Bruce, 2001; LaRossa & Reitzes, 1993). LaRossa and Reitzes (1993) described symbolic

interactionism in terms of shared meanings ('symbols') and verbal and nonverbal communications ('interactions'). Connection between these two components helps individuals to develop their identities through social interactions.

Symbolic interactional perspectives assume that role relationship, such as the father-child relationship, constitutes a multiplicity of identities wherein some identities are more dominant, and they affect fathers' decisions regarding their behaviour (e.g. fathers' decisions about investing time and energy in care of infant) (LaRossa & Reitzes, 1993). Furthermore, symbolic interactionism emphasizes family as a social group. Research that is framed within this theory analyzes how family members obtain similar senses of the world (or symbolic reality - shared goals and beliefs), how they construct and learn different roles within family, how such factors as race/ ethnicity, gender, and age relate to family groups, what role the society and education play, and most importantly, how all these factors influence the behaviour of each family member (LaRossa & Reitzes, 1993).

The present study focused on the father's role, factors that influence fathers' behaviour in regard to father-infant interaction and support of the breastfeeding, and eventually how fathers' involvement affects infants' development. The study examined these concepts using identity theory (Stryker, 1968)

Identity theory is derived from the symbolic interactionist framework, and is defined in terms of the roles or statuses (e.g. father, spouse, etc.) that can change under the influence of social factors. In other words, the main idea is that behaviour is guided by identities. Considering the fact that symbolic interactionism is a theoretical framework rather than a theory, identity theory was used to define specific concepts (paternal attitudes, fathers' attachment and involvement, socioeconomic status, etc.) and their relationships in a given context (a district in Vietnam).

The extent of the father's involvement with children can be influenced by a man's perception of himself in the father's status (Habib, 2012; Pasley, et al., 2002). The centrality of a particular role to a person influences the extent of the engagement in this role (Stryker, 1987). The number of identities a person has is proportional to the number of roles that person plays in a society (Stryker, 1987; 1989), and relationships between role and identity effect the objective expectations of the society and the subjective expectations of the person in regard to the position that he or she acquires (e.g., becoming a mother, or a father) (Pasley, et al., 2002). More specifically, behavioural expectations for a man who holds the positions of father, spouse, and worker include taking care of a child, supporting his wife, and providing in terms of financial needs of the family.

Furthermore, commitment to an identity (e.g., father) and commitment to a relationship (e.g., a relationship with a child) should be differentiated (Fox & Bruce, 2001). More specifically, commitment to an identity can be measured through paternal attitudes toward their involvement, or the way fathers perceive their role, as well as through decisions fathers make to be engaged in a behaviour (Fox & Bruce, 2001), whereas commitment to a relationship is contingent, not unconditional, and it can be measured through the actual involvement with the child (Furstenberg & Nord, 1985; Ihinger-Tallman, Pasley, & Buehler, 1993; Seltzer & Brandeth, 1994). A major determinant of fathering behaviour is the prominence of a father status among other statuses that a man possesses (worker, friend, etc.) in a man's view; the higher the father status, the more father-related behaviour will be demonstrated by a man (Habib, 2012). However, because of the influence of these multiple roles, marital relationship can be a moderator of the relationship between fathers' involvement and child's

development (Furstenberg & Nord, 1985; Ihinger-Tallman, Pasley, & Buehler, 1993; Seltzer & Brandeth, 1994).

Theoretical Model for the Present Study

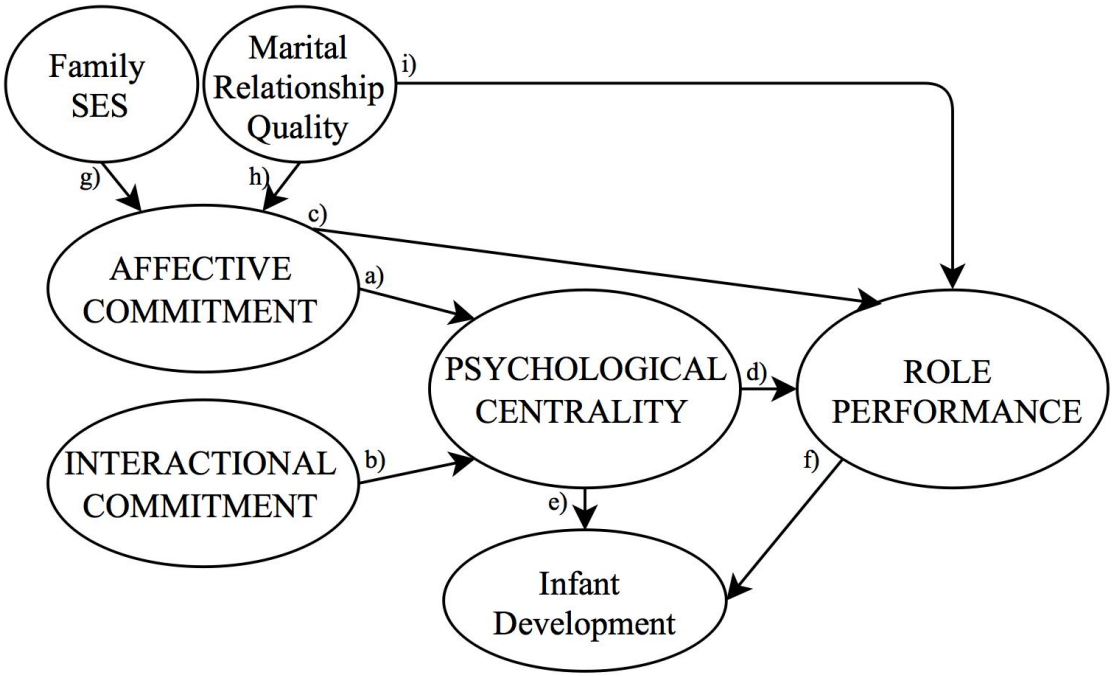
Based on Stryker's and Serpe's (1994) theoretical model of identity salience and psychological centrality, Pasley et al. (2002) developed a model to examine fathers' commitment to role identity and its effects on men's performance in the role identity as a father. Identity salience is a likelihood of invoking a given identity in a situation, whereas psychological centrality represents the perceived importance of a given identity. To test this model, Pasley et al. (2002) conducted a study wherein 186 fathers completed a self-administered questionnaire about the father role and involvement in that role, and found that the more important father role identity is to men, the greater their involvement in the child's life. Moreover, Pasley et al. (2002) found that fathers' opinion about their role can be affected by men's perception of the mothers' attitudes toward fathers, and the more positive these perceptions are, the greater the importance fathers placed on the father role identity, and as a result, the more involved fathers were in child-related activities.

Drawing concepts from Pasley's et al. (2002) model of the direct and indirect effects of interactional and affective commitment on fathers' role performance, and based on the literature on fathers' involvement (Almroth et al., 2008; Barnett & Baruch, 1987; Cabrera et al., 2000; Fox & Bruce, 2001; Goldschieder & Waite, 1991; Lee & Doherty; 2007; Tran et al., 2014; Yogman et al., 1995), a comprehensive model of connections between father-related and infant-related variables was developed for the present study (Figure 1). The model included the following identity theory constructs: interactional and affective commitments, psychological centrality, and role performance.

In addition, for the purposes of the present study, the model included external variables: Socioeconomic status of the family, Relationship quality; internal variables: Fathers' involvement in breastfeeding practices, Role performance, Affective and Interactional Commitment to fathering, Psychological centrality; and finally, the outcome variable: Infant's developmental outcomes (Figure 1).

Figure 1.

Effects of Commitment to Fathering on Fathers' Role Performance, Psychological Centrality and Infant's Developmental Outcomes



A number of authors have used identity theory (Stryker, 1968; model proposed by Stryker &Serpe, 1994) as a theoretical framework in the context of fathers' involvement (Goldberg, 2015; Sanderson & Thompson, 2002; Stringer & Barnes, 2012; Tremblay & Pierce, 2011; Troilo & Coleman, 2012); nevertheless, all of the above mentioned studies focused merely on individual constructs rather than holistically testing the theoretical model of fathers' involvement. More specifically following combinations of constructs were tested: psychological centrality and role performance (Fox & Bruce, 2001; Gaunt & Scott, 2014; Troilo & Coleman, 2012),

psychological centrality and marital satisfaction (Tremblay & Pierce, 2011), psychological centrality, role performance and marital satisfaction (Goldberg, 2015; Sanderson & Thompson, 2002).

Gaunt and Scott (2014) explored fathers' involvement in childcare from the perspective of the importance of the psychological centrality, and concluded that the centrality of paternal identities has a positive significant correlation with the fathers' involvement in childcare. Affective commitment and relation of the fathers' attitudes were not examined in regard to the father-child interaction.

Tremblay and Pierce (2011) argued that marital satisfaction is the most frequently examined predictor of the fathers' involvement. These authors found a strong correlation between those constructs, however, considering the fact that their study focused primarily on mothers' perceptions of fathers' involvement it may not be a representative assessment of the latter.

Goldberg (2015) examined the association between the fathers' psychological centrality and role performance, and concluded that the psychological centrality of the father's identity at the time their child was born was related to the extent of their involvement during their child's first five years. In addition, Goldberg (2015) considered fathers' level of education and relationship quality with child's mother at the time their child was born, and concluded that those factors played an important role in understanding the relationship association between the fathers' psychological centrality and role performance.

Furthermore, a number of authors examined paternal' involvement from the identity theory approach considering salience of the identities (Pasley, Petren, & Fish, 2014). Identity salience is defined as the "probability that a given identity will be invoked in social interaction or, alternatively, as a substantial propensity to define a

situation in a way that provides an opportunity to perform that identity" (Brenner, Serpe, & Stryker, 2014, p. 232). Psychological centrality is the subjective importance of identities relative to other identities, and it is defined in terms of the individual's feeling of worth of the specific self-concept (Rosenberg, 1979). From the empirical research it is evident that psychological centrality and salience can both predict individual's behavior and a number of authors argued that those concepts overlap (Goldberg, 2015). The present study involved secondary data analysis and identity salience was not measured. Thus, consonant with the model tested by Pasley et al. (2002), this present study focused on the psychological centrality concept, the factors that affect psychological centrality and the effects of psychological centrality on fathers' role performance and infant development.

Affective Commitment

There are two predominant factors that are hypothesized to determine psychological centrality, affective commitment and interactional commitment. Affective commitment is defined as the intensiveness or depth of interactions in a social network that a person attributes to a specific role identity (Pasley et al., 2002), more specifically, it is the emotional significance attributed to a given identity. According to the original identity theory, affective commitment is referred to as the affect associated with relationships forgone (Stryker & Serpe, 1994).

Affect represents through thoughts or actions with emotional implication in an experiential sense; similarly, attitudes are characterized with affective or emotional information, as well as the information concerning past behaviours or intentions (Zanna, & Rempel, 2007). Therefore, as a construct, affective commitment can be further developed and broadened, and in addition to the emotional association, an attitudinal component should be considered when measuring affect. Fazio and Petty

(2007) argued that attitudes have a strong emotional basis, and that affect can be "a powerful determinant of our attitudes" (p. 134). Zanna and Rempel (2007) defined attitudes in terms of the "categorization of a stimulus object along an evaluative dimension" (p. 11), and proposed three classes of information: cognitive information, affective information, and information related to past behaviours. In addition, Eagly and Chaiken (1993) reviewed the formation of research on attitude beginning in the late 1960s and noted the connections between cognitive and affective approaches to understanding the underlying mechanisms of attitudes. Hence, according to the current literature, the symbiosis of affect, attitudes and knowledge may provide a more accurate representation of affective commitment as a theoretical construct rather than analyzing affective commitment merely as reflected appraisals or the importance of a role.

Thus, in the present study, affective commitment was considered as a construct that involves attitudes. Attitudes influence fathers' behaviour to a great degree, and from the family perspective, both mothers' and fathers' attitudes about fathers' involvement may have an influence on the actual involvement of fathers in their children's life (Lee & Doherty, 2007). Several authors claimed that, regardless of their marital satisfaction, fathers who have positive attitudes toward their involvement with children would be more involved (Holden & Edwards, 1989; Lee & Doherty, 2007). Moreover, woman's attitudes toward the role of fathers may also have an impact on fathers' attitudes about their involvement with children. In families where mothers have more liberal attitudes about the male role, fathers are more involved (Barnett & Baruch, 1987).

Another important aspect is fathers' knowledge about child development. Fathers' knowledge can be described in terms of understanding of the parental

responsibilities that would result in contribution to the child development (Gherghinescu, & Glăveanu, 2015; Glăveanu & Creangă, 2009). More educated fathers are also likely to have more knowledge about child development, and a number of studies have found a linkage between paternal educational attainments and the level of fathers' involvement (Fagan & Barnett, 2003; Lamb, 1986, 1997). Parents' knowledge about child development can influence their understanding of the importance of the parents' involvement (Lamb, 1986; 1997). Lamb (1986; 1997) found that more knowledgeable fathers are more motivated to spend time with their children.

It is possible that attitudes change under the influence of external factors. Cabrera et al. (2000) emphasized the fact of the fathers' development throughout their children's lives, and how fathers' attitudes change under the influence of cultural and social factors. Some of the social aspects include the extent of the encouragement from the fathers' social network (Pasley et al., 2002). A cross-cultural understanding of the fathers' role differs depending on values and ideologies of the local community. For instance, Asian fathers used to be characterized as authoritarian, but under the influence of the recent urbanization their attitudes toward fathering have become less rigorous (Shwalb, Shwalb, & Lamb, 2013). Despite this fact, the level of the fathers' involvement in Asian cultures remains low comparing to the Western families (Jayakody & Phuong, 2013), and it is important to understand the underlying reasons of this predisposition.

Previous researchers have used various instruments to assess affective commitment, including the importance of others' perceptions of a person in a specific role (sample item: "How important it is to you that your [parents, best friend] view you as being involved in [activities related to a given identity]?") (Stryker &Serpe,

1994), and the person's willingness to commit to a specific role identity (sample item: "I would be very happy to spend the rest of my career with this organization") (Lam, & Liu, 2014). In a number of studies, authors used adapted versions of Stryker and Serpe's (1994) measures of affective commitment (Cassidy, &Trew, 2004).

In the context of fathers' involvement, affective commitment has been measured through fathers' perception of their spouses' satisfaction with their paternal role (sample item: ''She feels good about the amount of involvement I have with my children"), and through fathers' perceptions of their spouses' opinion regarding their paternal efficiency, worthiness and responsibility (e.g., kind-cruel, sensitive-insensitive, dependable-unreliable) (Pasley et al., 2002).

However, findings from several studies on parents' involvement in child development suggest that parental attitudes in combination with the self-ascribed importance of the parental role would be a better proxy of affective commitment (Fagan & Barnett, 2003; Fox & Bruce, 2001; Holden & Edwards, 1989; Lee & Doherty, 2007; Stryker & Serpe, 1994), thus, it is important to expand the understanding of affective commitment as a theoretical construct. While maintaining the original definition from identity theory, where affect is the importance of relationships and emotional bond to an identity, a broader connotation is necessary in order to deepen the understanding of this construct.

Interactional Commitment

Interactional commitment refers to extensiveness of social relationships that person attributes to a role identity (Pasley et al., 2002). More specifically, the extensiveness is operationalized as time, energy, and resources that a person expends within the realm of a certain identity (Pasley et al., 2002).

From the methodological perspective, interactional commitment has been measured through person's activities in various organizations related to a given identity and connections that they have made (sample item: "whether or not subjects had joined any organization related to a given identity") (Stryker & Serpe, 1994), and through examining positive and/or negative changes in relationships in a social network given a certain identity (Cassidy & Trew, 2001). According to Pasley et al. (2002) fathers' role identity may increase in its importance if fathers' social network encourages enacting the father role identity through involvement with the child.

In the research on fathers' involvement, the number of the instrumental examples is limited, since interactional commitment has not received sufficient attention as a separate construct (Pasley et al., 2002). To measure interactional commitment, Pasley et al. (2002) examined the number of encouraging persons in fathers' social network. Thus, interactional commitment can be viewed from the standpoint of encouragement of a given identity by the person's social network, and through attitudes that fathers' social network demonstrates.

Psychological Centrality

Psychological centrality is a self-attributed importance that a person attaches to a role identity (Stryker & Serpe, 1994). The more central an identity is, the greater the possibility that responsibilities associated with this identity would be chosen over other responsibilities. In terms of the fathers' role, the more attached the father is to his child, the more important that role may be assumed to be for that father.

A sense of connection to a significant other affects a person's self-concept and self-esteem, and as a result, it influences the psychological centrality of a given role identity. The self-concept, or psychological centrality, is an extremely complex structure, it is a composite of a large number of "social identity elements, traits,

physical characteristics, abilities, interests, ego-extensions" (Rosenberg, 1979, p. 181), and other components. Consequently, in the context of fathers' involvement, an understanding of a self involves the cognitive presence of a child to a father. Goldberg (2015) measured the psychological centrality of a fathers' identity through assessment of the cognitive presence of a child to the father and through asking about the frequency that the father thinks about the child (sample items: "Do you think about what is best for your child/ren", "Do you think about your child/ren"), or using assessment of men's agreement to statements about their fathering role (sample items: "Being a father and raising children is one of the most fulfilling experiences a man can have", "I want people to know that I have a new child") (Goldberg, 2015).

A father can also perceive his role identity through his attachment to the child. A person's sense of the interconnectedness between self and other can be influenced by the extent of the attachment to a specific role identity. Similar to ideas of the 'Inclusion of the other in the self' theory, the idea of attachment as overlapping selves seems consistent with a wide variety of approaches to attachment in the social psychology literature (Aron, Aron, & Smollan, 1992). Thus, psychological centrality as a construct in this study is being viewed from the attachment perspective.

Research that has been conducted has suggested that attachment to the child, or the strength of father's emotions, can affect the amount and quality of time that father spends with his child (Bretherton, Lambert, & Golby, 2005; Grossmann, Grossmann, Kinder, & Zimmermann, 2008; Pasley, et al., 2002). Some of the characteristics of positively involved fatherhood include affection, protection, caring, and commitment (Palkovitz, 2002). Bretherton et al. (2005) found that, in being attachment characters, fathers felt valued when they were able to comfort a distressed child; furthermore, fathers reported that children's affectionate greetings when they

reunite affect paternal attachment. In addition to providing a sense of comfort as a behaviour that enhances fathers' attachment, fathers also reported about the importance of providing feelings of security to their children (Bretherton et al., 2005), as well as about the importance of the fathers' feeling of being "needed", and a sense of "being there" for a child (Lupton & Barclay, 1997).

In regard to the link between fathers' attachment and fathers' involvement, Goodsell and Meldrum (2010) found that to acquire higher levels of attachment, the quality of interaction was of much more importance than the number of opportunities for involvement.

Thus, in pursuit of obtaining an understanding regarding paternal psychological centrality it is valuable to measure the level of fathers' attachment to the child (Greenberg, & Mitchell, 1983; Levine, Tuber, Slade, & Ward, 1991).

Role Performance

Role performance is referred to as ways in which individual may choose to enact a particular identity, and the frequency of the involvement in this particular role (Goldberg, 2015; Pasley et al., 2002). The construct of role performance is represented by the fathers' behaviour. Fathers' involvement in their children's lives can be direct and indirect (Pleck, 2012), where direct involvement implied father-infant interaction, and indirect involvement implies support of the breastfeeding that can affect infants' development (Rempel & Rempel, 2011). Therefore, fathers' role performance was measured through the father-infant interaction and through fathers' involvement in breastfeeding decisions of mothers.

Father-infant interaction. In developmental psychology, the importance of maternal care for children has been widely accepted, and established by a number of studies (Bornstein, 2002; Bowlby, 1951; Cabrera et al., 2000; Lamb, 1977). Mothers'

involvement is associated with positive developmental outcomes in children (De Wolff & van Ijzendoorn, 1997; Landry, Smith, Swank, Assel, & Vellet, 2001; National Institute of Child Health and Human Development [NICHD], 1999). The earliest research on the influence of parenting on children's development focused almost exclusively on mothers. However, in the 1970s, several authors decided to examine fathers' role, and found that men can be responsive and sensitive with children as well, and that a higher level of fathers' involvement can predict better cognitive outcomes in children (Baruch & Barnett, 1981; Belsky, 1979; Lamb, 1977; Lamb, 1997; Shannon, Tamis-LeMonda, London, & Cabrera, 2002; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004).

One of the limitations for most research in the area of parenting is that the association between fathers' involvement and children's development generally has been analyzed from the mothers' perspective (Roy & Kwon, 2007), whereas research has demonstrated that reports about parenting differ between mothers' and fathers' perceptions and experiences (Mikelson, 2008). In general, mothers' reports indicate lower levels of fathers' involvement in comparison to fathers' reports (Coley & Morris, 2002; Mikelson, 2008; Seltzer & Brandreth, 1994; Smock & Manning, 1997). Discrepancy of this nature can be a consequence of a communication gap between partners, and can result in under- or over-estimation of the expectations in regard to parental responsibilities. Social and demographic factors can influence mothers' reports. More specifically, it was found that more negative reports of marital relationship quality predict greater discrepancy in estimates of fathers' involvement (Coley & Morris, 2002; Mikelson, 2008).

Moreover, many existing studies measure solely fathers' presence and lack deeper analysis of the level of the fathers' involvement and its relationship to the

children's developmental outcomes (Pougnet et al., 2011; Teachman et al., 1998). Studies that in fact considered such measures as fathers' responsibility for raising the child, and quality and quantity of the time spent with the child provide not only additional information in regard to the importance of fathers' involvement, but they allow to examine children physical and cognitive development considering the extent of the fathers' involvement (Coley & Morris, 2002; Mikelson, 2008).

Therefore, it is important to analyze the quality of fathers' involvement in their children's life through the lens of different dimensions of fathering, and the roles that fathers can play in the family; in other words, the extent to which fathers provide care and attention.

Role performance measurements have been conducted through the assessment of the number of hours that subjects reported spending weekly in activities that were associated with a given identity (Stryker &Serpe, 1994). In the context of fathers' involvement, role performance was measured by Pasley et al. (2002) by asking fathers about the frequency of involvement in a series of child-related activities (including but not limited to discipline, running errands with or for the child or children, and discussion of problems).

To summarize, role performance can be characterized as behaviour associated with a given role identity and can be measured though the amount of time spent in this specific role.

Fathers' involvement in breastfeeding decisions of mothers. Attitudes toward fathering can be described not only in terms of the fathers' behaviour in regard to children, but as well in regard to mothers. More specifically, fathers' involvement in children lives can be examined through fathers' direct interaction with the child, as well as though fathers' indirect involvement (Pleck, 2012) in supporting behaviours

that will affect child's life – for instance support of the breastfeeding (Rempel & Rempel, 2011). Thus, it is important to examine how fathers' support of the breastfeeding affects mothers' behaviour, and as a result how it influences child developmental outcomes.

EBF during the first months of the infant's life benefits the child's physical and cognitive health and development (Gartner, Morton, Lawrence, et al., 2005; Kramer &Kakuma, 2012). The World Health Organization (WHO, 2014) recommends continuing EBF up to 6 months of age, and breastfeeding along with supplementary food up to 24 months of age.

Based on the theoretical framework of the reasons model, Rempel and Fong (2005) examined mothers' decisions in regard to their breastfeeding intentions, and found that intentions predict the breastfeeding behaviour of mothers. In addition, mothers' knowledge can predict breastfeeding behaviour: more knowledgeable and confident mothers tend to initiate and continue breastfeeding more often than less informed mothers (Avery & Magnus, 2009; Brown, Raynor, & Lee, 2011). Another predictor of the mothers' decision is support from partners (Brown & Lee 2011; Persad & Mensinger, 2008); higher levels of support encourage greater maternal confidence to continue breastfeeding (Hauck, 2004).

However, the number of studies of the fathers' role in breastfeeding is relatively small, as well as the number of studies that examine fathers' attitudes; most of the studies concentrate on mothers' opinions of the fathers' role (Hauck, 2004; Powell &Baic, 2011). Rempel and Rempel (2011) posited the merits of fathers' involvement in the breastfeeding family. Rempel and Rempel (2011) found that fathers tend to consider mothers the most valuable figures in breastfeeding, and some of the fathers felt distanced because their role was insignificant in this process.

Nevertheless, fathers' believe that their assistance in the breastfeeding process is important for them in their fathers' role, and that they can make unique contributions, thus, health care providers should encourage fathers to learn about breastfeeding (Rempel & Rempel, 2011).

According to World Health Organization and The United Nations Children's Fund (WHO/ UNICEF, 2003) the proportion of breastfeeding mothers at 4 to 6 months is still low at the global level. WHO and UNICEF (2003) provided several intervention strategies to improve breastfeeding practices, and in many developing countries the intervention programs succeeded (Hofvander, 2005; Merten, Dratva, & Ackermann-Liebrich, 2005).

In Vietnam the promotion of breastfeeding has been integrated into a number of national programs, however, overall breastfeeding goals were not reached (Almroth et al., 2008). Therefore, it is important to deepen understanding of the underlying reasons of mothers' breastfeeding decisions, and increase mothers' and fathers' knowledge about the benefits of breastfeeding in Vietnam. Support in breastfeeding that fathers provide to mothers is an indirect fathering role that in specific cultures and under certain circumstances is not assumed by fathers, thus, it is important to understand what affects fathers' attitudes about supporting mothers, and whether fathers' knowledge about child development affects their supporting behaviour. Consequently, it is important to examine how fathers' attitudes and knowledge about breastfeeding affects fathers' involvement in supporting mothers' decisions about breastfeeding.

Fathers' Involvement and Developmental Outcomes in Children

The amount and extent of fathers' involvement affects both physical and cognitive outcomes in children's development (Pougnet, Serbin, Stack, &

Schwartzman, 2011). Higher levels of fathers' involvement are associated with better mental health in children and more positive child-father relationships (Wilson & Prior, 2011).

Bretherton et al. (2005) investigated father-child interaction and its outcomes, and concluded that fathers' positive engagement and higher levels of commitment can be predictors of positive developmental outcomes in children's health, as well as in children's social skills.

Ryan, Martin, and Brooks-Gunn (2006) conducted a study that analyzed parenting patterns and their relationship to children's developmental outcomes, and found that children who had supportive fathers in addition to supportive mothers, scored higher on the mental development index scores of the Bayley Scales of Infant Development-II (Bayley, 1993) (after controlling for SES).

Similarly, using longitudinal data, Teachman, Day, Paasch, Carver, and Call (1998) examined the influence of fathers' presence on behavioural and cognitive outcomes in children, and found that children who live with fathers exhibit higher cognitive level in comparison to children who lived in one-parent families, and that these differences were stable across time.

In addition, Pougnet et al. (2011) analyzed associations between fathers' presence and developmental outcomes in children in socioeconomically at-risk families, and concluded that fathers' presence has a positive influence on cognitive and behavioural outcomes in children's development. In addition, socioeconomic factors and quality of the home environment predicted children's cognitive functioning (Pougnet et al., 2011).

Considering a limited number of the father involvement studies in developing countries, and in Vietnam in particular, as a part of the present study it is important to examine relationship between fathers' involvement and infants' development.

Marital Relationship Quality

Condon et al. (2008) explored the construct of the fathers' attachment in different points of time including antenatal and postnatal periods, and in their conclusions authors stated that marital relationship quality has an influence on the extent of fathers' attachment and involvement especially during the antenatal period. This finding suggests that fathers who have more positive attitudes toward their relationships with wives, would develop more positive emotional bonds with their future children. Despite the fact that fathers' relationships with mother could positively affect fathers' attachment to the child, it does not necessarily mean that strained marital relationship would impede the positive development of the father-infant relationship (Goodsell, & Meldrum, 2010). Furthermore, during the postnatal period, such factors as infants' temperament would have an influence on fathers' attachment to the infant (Condon et al., 2008). Infant-father relationship can be also influenced by the infant-mother connection, and fathers' role may increase if mothers provide lower levels of care.

Studies of marital quality and its relationship to socioeconomic status of the family revealed conflicting results. Lee and Doherty (2007) found a positive correlation between fathers' involvement and marital satisfaction in families where both parents worked, and a negative correlation where only fathers had a job. Lee and Doherty (2007) suggest that the explanation for the second finding might be that fathers who are unsatisfied with their marriage spend more time with their children to avoid conflicts with their wives.

The Role of Socioeconomic Factors

Due to the differences in outcomes that were measured in various studies, it is challenging to determine which patterns of influence on child's development are the most important (Cabrera et al., 2000). The well-being and cognitive development of children are associated with fathers' emotional investment and attachment to children (Lamb, 1997), as well as with their financial support (Yogman, Kindlon, & Earls, 1995). Therefore, it is important to analyze effects of the socioeconomic status of the family on fathers' involvement and children's developmental outcomes. Measures of SES typically consist of parental education level, parental marital status, employment status, occupation, and household situation (Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013).

Employment status, particularly of mothers, is one of the most studied socio-demographic predictors of fathers' involvement (Pleck, 1997). However, in the fatherhood literature this variable has not received sufficient attention. Several studies found that lower socioeconomic status has an effect on the well-being and development of children, including cognitive development (Letourneau et al., 2013).

Moreover, several studies have demonstrated the connection between fathers' involvement and various demographic variables, such as educational level, and it was found that fathers with higher level of education are more involved in their children's academic life (Blair, Wenk, & Hardesty, 1994; Goldschieder& Waite, 1991; Nord, Brimhall, & West, 1997). In addition, mothers' level of education influences their decision about discipline measures (Boe, Sivertsen, Heiervang, Goodman, Lundervold, & Hysing, 2014). Boe et al. (2014) found that higher educated mothers use less negative disciplinary practices, and as a result their children have fewer mental health problems.

Financial involvement is a double-edged sword: in several studies it was found that financially successful fathers spend less time with their children than low-income fathers, however, successful fathers' impact on children development is higher (Cabrera et al., 2000). One of the possible explanations for that could be the difference in fathers' attitudes toward their children, and further research is needed to understand the rationale around fathers' involvement.

In contrast, Grych and Clark (1999) found that fathers' marital satisfaction was negatively related to involvement in dual-earner families, and positively in single-earner families. Grych and Clark (1999) have not found support for the notion that mothers' employment status can affect the father-child relationship, but the number of hours mothers work may shape the context in which parenting occurs, thus, may change fathers' level of involvement. As one of the explanations of these findings, Grych and Clark supposed that fathers who feel more responsible for taking care of a child due to mothers' full-time employment, experience frustration trying to balance work and family responsibilities, and as a result feel less satisfied with marriage.

One of the possible reasons to explain the discrepancies in the findings is related to methodological issues, and in particular, to the aspects of quality of father involvement that were measured in different studies. Specifically, Lee and Doherty (2007) assessed quality of fathers' involvement in terms of warmth and emotional support and intrusiveness in child's activity. On the other hand, Grych and Clark (1999) assessed quality of involvement based on fathers' mood, tone of voice, and rigidity-flexibility when playing with child. Therefore, the relationship between fathers' marital satisfaction and involvement may depend on what aspects of father involvement are being measured.

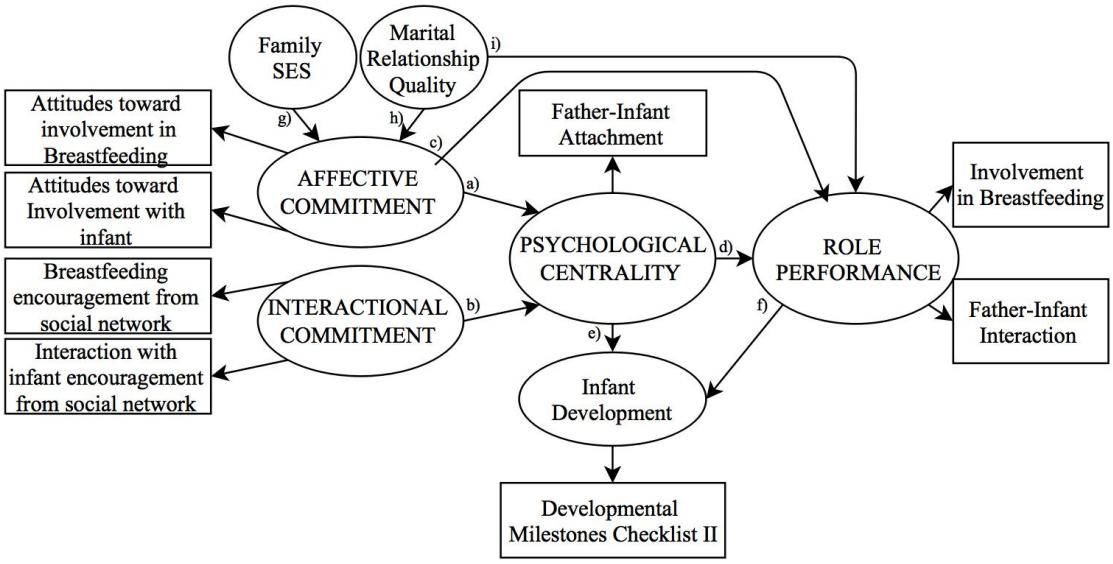
Chapter 3 – Methodology

Model Paths

The comprehensive model of connections between father-infant relationship-related constructs was tested. In order to obtain a better understanding of the model organization each path will be discussed (Figure 2).

Figure 2

Effects of Commitment to Fathering on Fathers' Role Performance, Psychological Centrality and Infant's Developmental Outcomes with manifest variables



Affective commitment (personal emotional connection) (path a) and interactional commitment (social aspect) (path b) can impact fathers' psychological centrality, or fathers' attachment to the infant (Fox & Bruce, 2001). Furthermore, affective commitment to a role can influence fathers' role performance (involvement in this role; in particular involvement with the baby or in supporting mothers' decisions about breastfeeding) (path c) (Lee & Doherty, 2007). Fathers' psychological centrality in its turn can influence fathers' role performance (path d) (Bretherton, Lambert, &Golby, 2005; Pasley, et al., 2002), and in addition it can have a direct effect on infant development (psychological and physical) (path e) (Lamb, 1977).

Role performance, or the amount of time fathers spend with their children can have a direct impact on infant development (path f) (Pougnet, et al., 2011; Ryan, et al., 2006).

To consider additional factors, family SES (path g) (Yogman, et al., 1995) and marital relationship quality (path h) (Pleck, 1997) were included as factors influencing fathers' affective commitment. Additionally, marital relationship quality can influence fathers' role performance (path i) (Lee & Doherty, 2007).

Sample

The analysis in this study used secondary data—data obtained from a longitudinal project that was conducted in Vietnam in two districts of Hai Duong province: Kim Thanh (intervention group) and Cam Giang (control group) (Rempel, Rempel, Bich&Hoa, 2014). Specifically for this study, only data obtained from the control group was analyzed to assess the theoretical model of the fathers' involvement.

Completed questionnaires were obtained from 412 fathers at the baseline stage (when fathers' spouses were 20 to 27 weeks pregnant with the study infant), 390 fathers at the 1-month, 384 at 4 months, and 374 at 9 months stages of data collection. Overall, the sample is best described as Vietnamese and educated. More specifically, fathers ranged from 20 to 60 years ($M = 30.38, SD = 5.48$). Regarding education, most of the participants (68.7%) had completed secondary or high school; 26.4% had completed college or some graduate study. The number of previous children in household ranged from 0 to 5 (on average, 1 child per household).

Measures

Participants completed self-administered questionnaires at 4 different points in time: before their children were born (baseline), and after 1-month, 4-months and 9-

months of their children's day of birth. In addition, infants' development was assessed at 9-month after their birth.

Demographic variables (Appendix A). The demographic questionnaire includes information about mother' and fathers' age, education, and occupation. In addition, it includes information about a number of children in family, and, if applicable, the age and sex of children and whether they were breastfed. For the measurement of the socioeconomic status (SES) (Appendix B) of the family, parents reported about their housing and environmental conditions (10 items). A total score was calculated that weighted each condition in terms of its association with economic prosperity.

Marital relationship quality (Appendix C). Relationship quality with spouse was measured using 4 subscales from Gere and MacDonald (2013):

– *Intimacy* (5 items). Sample item includes: "I feel that I really understand my partner". Responses ranged from 0 (*not at all*) to 10 (*completely*).

– *Satisfaction* (3 items). Sample item includes: "I am extremely happy with my current romantic relationship". Responses ranged from 0 (*not at all*) to 10 (*completely*).

– *Trust* (5 items). Sample item includes: "I feel that I can trust my partner completely". Responses ranged from 0 (*not at all*) to 10 (*completely*).

– *Commitment* (3 items). Sample item includes: "I am very committed to maintaining my relationship". Responses ranged from 0 (*not at all*) to 10 (*completely*).

Affective commitment in regard to interaction with infant (Appendix D). The scale was developed for the father involvement intervention study by Rempel, Bich, Rempel & Hoa (2014). Attitudes toward father - infant relationship were

assessed using 6 items. Sample items include: “It is important for fathers to pay attention to what their baby needs and respond in a way that is best for the baby” and “It is fun to play with my baby”. Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicated that the father had more positive attitudes toward spending time with his infant.

Affective commitment in regard to breastfeeding (Appendix E). The fathers’ breastfeeding attitudes scale (Rempel, Rempel, Bich & Hoa, 2014) included 5 items, which were composed of 2 scales: attitudes and efficacy. Sample item for the attitudes scale includes: “Feeding the child is responsibility of both wife and husband”. Sample items for the efficacy scale include: “I am able to work together with my wife to ensure that she can breastfeeding exclusively for 6 months no matter what happens”. Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicated that the father was more positive about the importance of breastfeeding and had more positive attitudes about helping mother to decide to breastfeed their baby.

Interactional commitment in regard to interaction with infant (Appendix F). Fathers’ perception of fathers’ involvement with infants support from their social network (wife, parents, wife’s parents, friends, co-workers) was assessed using 3 items. (Rempel, Rempel, Bich & Hoa, 2014). Sample items include: “My wife thinks that I should be very involved with my baby”, “My parents and my wife’s parents think that I should be very involved with my baby”. Higher scores indicated that fathers’ social network had more positive attitudes about the father-infant interaction.

Interactional commitment in regard to exclusive breastfeeding (Appendix G). Fathers’ perception of breastfeeding support from their social network (wife, parents, friends, co-workers) was assessed using 6 items. (Rempel, Rempel, Bich &

Hoa, 2014). Sample items include: “My wife thinks that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months”, “My friends think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months”. Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicated that fathers’ social network had more positive attitudes about the exclusive breastfeeding.

Psychological centrality (Appendix H). Attachment to infant was measured with scale that includes 19 items (Condon &Corkindale, 1998; Condon, Corkindale, & Boyce, 2008). A sample item is: “When I have been away from the baby for a while and I am about to be with him/her again, I usually feel:”. Responses ranged from 1 (negative feelings about the idea) to 5 (intense pleasure at the idea). Higher scores indicated that the father was more attached to the infant.

Role Performance in regard to the interaction with infant (Appendix I). The role performance scale was developed by Rempel & Rempel based on a qualitative study (Rempel & Rempel, 2011) in which fathers were asked about the ways they develop a relationship with their breastfeeding infants. The scale was adapted to be used in Vietnam. Father-infant interaction was measured using 3 subscales (affection, caretaking, and play), which included in total 23 items. Sample items for affection subscale include: “Kiss your baby”, “Try to soothe and comfort your baby”. Sample items for caretaking subscale include: “Feed your baby”, “Give your baby a bath”. Sample items for play subscale include: “Entertain your baby with baby toys (e.g., rattle, ball)”, “Copy your baby’s faces, noises, or actions”. Responses ranged from 0 (*never*) to 4 (*very frequently*). Higher scores indicated that the father spent more time with infant.

Role Performance in regard to the involvement in breastfeeding practices (Appendix J). Fathers' involvement in breastfeeding practices was measured using a scale developed by Rempel, Rempel, and Moore (In press; Rempel & Rempel, 2011). Four subscales breastfeeding savvy, helping, presence, and responsiveness, included 25 items in total. Sample items include: "Discuss or negotiate with your partner about how long to breastfeed", "Share household chores or take care of the tasks that are normally your partner's responsibility in order to free up your partner's time and energy (e.g. clean the house, do the laundry)", "Be patient and understanding of the time it takes to breastfeed and don't get upset if the other housework is not done". Responses ranged from 0 (*never*) to 4 (*very frequently*). Higher scores indicated that the father was more supportive of his wife in her decision to breastfeed, and that the father shared household responsibilities to help the wife.

Infant Development (Appendix K). The Developmental Milestones Checklist II (Prado et al., 2013) was used to assess infants' development of motor, language, and personal and social skills. Sample measures for the Locomotor scale include infants' performance in regard to: Head Control, Sitting, Standing (Sample items: "Stands when held up", "Stands alone 10 seconds"). Sample measures for Fine Motor scale include infants' performance in regard to: Watching and reaching (Sample item: "Reaches out and grasps objects"), Picking things up. Sample measures for Language scale include: Pre-speech language (Sample item: "Repeats vowels in strings"), Understanding words (Sample item: "Understands when told "no"), Using Words. Sample measures for Personal/ Social scale include: Reaction to others (Sample item: "Follows a moving person with eyes"), Recognition of others, Play, Eating and drinking (Sample items: "Takes liquids from cups when held to lips", "Can manage a cup well"). Possible responses included 0 (*respondent said*

child has not yet started doing the activity), 1 (*respondent said child has been able to do the activity in the past 4 weeks but not continually*), and 2 (*respondent said child has been able to do the activity continually for the past 4 weeks*).

Procedures

For the purposes of the original study, the majority of the measures were collected at several points in time. Table 1 indicates when each measure was obtained and which measurements were used in the current study.

Table 1

Measurement schedule for Father-Involvement in Vietnam study

Measure	Baseline	1 month	4 months	9 months
1. Demographic information	✓			
2. Housing and Environmental Measures	✓			
3. Relationship Satisfaction Measure	X		✓	
4. Attitudes toward Father-Infant Relationship	✓		X	
5. Father Breastfeeding Support Attitudes	✓	X		
6. Father-infant interactional commitment			✓	X
7. Interactional commitment regarding breastfeeding	✓	X		
8. Father infant attachment scale		X	✓	X
9. Activities with infant in the past month		X	✓	X
10. Activities in the past month for breastfeeding		X	✓	X
11. Developmental Milestones Checklist - II				✓

Note. X indicates that the measure was collected but not used for the Structural Equation Model.

✓ indicates the measures used for the Structural Equation Model in the present study.

Given the nature of the measures, it was decided to use the data that was collected at a 4-months for the following measures: Relationship Satisfaction

Measure, Father infant attachment scale, Activities with infant in the past month, and Activities in the past month for breastfeeding. For the Fathers' breastfeeding support attitudes and Father-infant relationship attitudes, data from the baseline was used, as it was the only data point when both manifest measures associated with Affective Commitment were assessed at the same point in time. Socioeconomic variables were measured at the baseline. Interactional commitment measures were collected at two time points; interactional commitment regarding breastfeeding measures was used from the 1-month stage, and the measures for the father-infant interactional commitment were used from the 4-months stage. The Developmental Milestones Checklist - II measure was assessed at the 9-months stage of data collection. By using measures collected at different time points, there is a reduction of the simultaneity bias. The association between the variables measured at the same time can be potentially reciprocal in nature, and it is difficult to determine the causational relationship between variables. Therefore, the effect of the fathers' role performance measured at 4 months on the infants' development measured at 9 months can be interpreted as causal with a lesser extent of the possibility of simultaneity bias.

Data Analysis

In the original study, data were entered, screened, and cleaned using Stata and SPSS version 23 (Kirkpatrick & Brooke, 2012). A complete subscales dataset for fathers' measures and child development measures was requested from the original study and formed a dataset for the analysis.

With respect to missing data, cases that were missing surveys at the 4-months stage of the data collection for psychological centrality and role performance were excluded from all data analyses (41 cases in total were excluded). After this procedure, the sample consisted of 371 participants. The remaining cases of missing

data were determined to be likely missing completely at random (MCAR) as a result of Little's tests (χ^2= 319.39, *df* = 452, *p* = 1.00). Missing data for these cases were imputed using the expectation maximization algorithm imputation in SPSS. Expectation maximization algorithm is an iterative method for finding maximum-likelihood estimates of unknown parameters in parametric distribution in incomplete data or data with missing values (Allison, 2002; Schafer & Graham, 2002). The percent of the missing data ranged from 0.3% to 3.2% cases per variable (1-12 missing cases per variable), and these missing values were replaced with Expectation Maximization means that were calculated in SPSS.

Means, standard deviations, and distribution statistics were calculated for all manifest variable scales and sub-scales. Repeated measures ANOVAs or dependent measures t-tests were conducted to describe changes in the manifest variables over time. Bivariate correlations were calculated between all variables included in the structural equation model.

Structural Equation Modeling

Structural equation modeling was conducted using AMOS version 23 (Arbuckle, 2011). The initial structural model included 7 latent variables (Interactional commitment, Affective commitment, Psychological centrality, Role performance, Infant development, Family SES, Marital relationship quality) and 9 manifest variables (Attitudes toward fathers' involvement in breastfeeding, Attitudes toward fathers' involvement with baby, Interactional commitment in regard to fathers' involvement with baby, Interactional commitment in regard to breastfeeding, Father-infant attachment, Father involvement in breastfeeding, Father-infant interaction, Developmental Milestones Checklist II, Family SES, Marital relationship quality). In total, there were 10 structural pathways in the model (Figure 2).

Model Specification

Maximum likelihood (ML) was used to estimate the model, as opposed to the asymptotically distribution-free (ADF) method. ML results in more precise estimates (with the smallest variance) when the data are normal, although it is important to point out that it is robust to deviations from normality in small samples (West, Finch, & Curran, 1995). Furthermore, ML exhibits less bias when the data are non-normal (Benson & Fleishman, 1994).

Model Assessment

The chi-square (χ^2) and additional indices (Root Mean Square Error of Approximation [RMSEA], Standardized Root Mean Square Residual [SRMR], Comparative Fit Index [CFI], Incremental Fit Index [IFI]) were selected to assess the fit of the model. The chi-square (χ^2) is the overall test of the model that evaluates the magnitude of discrepancy between the observed values and proposed theoretical values (Hu & Bentler, 1998). The bigger χ^2 indicates a larger discrepancy, thus, a significant and large χ^2 implies a poor fit. Alternative measures of fit, so-called fit indices, were used to account for the sensitivity to the sample size that is typical for the χ^2. The fit indices assess to what extent the model accounts for variation and covariation in the data.

RMSEA refers to the lack of fit in a model compared to the population covariance matrix (Browne & Cudeck, 1992). Given its sensitivity to the sample size, this index is less preferable with smaller samples (Tabachnick & Fidell, 2013). RMSEA of .06 or lower is considered to indicate an adequate fit; RMSEA of .08 is acceptable (Tabachnick & Fidell, 2013).

SRMR is an absolute measure of fit that is defined as the standardized difference between the observed sample variances and covariances and the predicted

population correlation (Tabachnick & Fidell, 2013). This measure can be biased by small sample size and low degrees of freedom. A value of zero indicates perfect fit, and a value less than .08 is generally considered a good fit (Hu & Bentler, 1999).

CFI compares the fit of the observed and predicted covariance matrices. CFI is not extremely sensitive to the sample size. CFI value greater than .95 indicates a good-fitting model (Tabachnick & Fidell, 2013).

IFI examines fit considering how the model accounts for the sample covariances compared to a more restricted null-model (usually the independence model where all variables are set to be uncorrelated) (Hammervold & Olsson, 2012). IFI value that exceeds .90 is considered as acceptable.

Chapter 4 – Results

Preliminary Analyses

To assess normality, both univariate and multivariate normality indexes were used. Univariate distributions were examined for outliers, skewness and kurtosis (Table 2).

Table 2

Means, Standard Deviations, Skewness and Kurtosis values

Variable	Mean	SD	Skew	Kurtosis
Education	3.98	1.149	.539	-.744
SES score	.5007	1.96256	-1.519	3.208
Commitment	9.2513	.91773	-1.809	4.873
Trust	9.0222	.95852	-1.735	5.983
Satisfaction	9.1856	.95189	-1.810	4.837
Intimacy	8.8411	.96099	-1.441	3.308
Personal-social	30.3019	3.99939	-1.164	4.604
Language	10.7466	3.31996	.313	-.432
Caregiving	2.2833	.72031	-.161	.214
Play	2.5214	.71314	-.594	.936
Affection	3.0470	.56169	-1.120	4.700
Responsiveness	2.7652	.52511	-.287	.231
Presence	2.2803	.81200	-.094	-.547
Interaction pleasure	4.4588	.47982	-1.120	2.831
Hostility absence	4.2862	.50474	-.453	.123
Motor	28.2183	4.62581	-.040	.901
Interactional commitment - breastfeeding	2.5854	1.03365	.141	-.856
Father-infant interactional commitment	4.0117	.58984	-1.319	4.282
Attachment quality	4.1955	.41572	-.258	-.002
Helping	2.8981	.57209	-.923	2.930
Savvy	2.6149	.60685	-.205	.168
Breastfeeding attitudes	4.1558	.75408	-1.877	5.378
Father-infant attitudes	4.0035	.53642	-.548	1.408
Multivariate				117.138

The majority of the distributions in the data were within the normal range. Variables that deviated from normality were marital relationship quality manifest variables (commitment, trust, satisfaction, intimacy), and breastfeeding attitudes.

Multivariate normality was evaluated using Mardia's (1970) coefficient and Mahalanobis distance.

Mardia's (1970) coefficient examines normality through multivariate kurtosis assessment, and it revealed substantial multivariate kurtosis (total sample coefficient = 117.14).

Mahalanobis distance indicates the distance between a case (or a data point) and the centroid (overall multivariate mean) (Ulman, 2006). For the dataset in this study, Mahalanobis d-squared ranged from 28.76 to 74.72, with an outlier-observation for which the Mahalanobis d-squared was 106.94; consequently, that observation was deleted from the analysis, and the final sample consisted of 370 cases.

Means and standard deviations for full-scales associated with each of the manifest variables are reported in Table 3.

Changes over time were assessed with independent measures t-tests for variables measured at two time-points and repeated measures ANOVA for variables measured at three time-points. Results are reported in Table 3.

The repeated measures analyses demonstrated significant differences over time in marital relationship quality (statistically significant decrease from baseline to 1 months) and father-infant interaction measures (significant increase from 1 month to 4 months, and from 4 months to 9 months).

For the fathers' involvement in breastfeeding measures, there were significant differences between 4 months and 9 months measures ($p < .002$), where the fathers' involvement in breastfeeding significantly decreased.

Table 3

Means, Standard Deviations, and changes over time for scale scores associated with manifest variables

Variable	Baseline *M* *(SD)*	1 month *M* *(SD)*	4 months *M* *(SD)*	9 months *M* *(SD)*	*F / t*
Relationship satisfaction measure	9.31 (0.86)		9.08 (0.86)***		21.79
Father-infant relationship attitudes	4.00 (0.54)		4.04 (0.42)	4.00 (0.59)	0.877
Father breastfeeding attitudes	4.16 (0.75)		4.13 (0.65)		0.219
Father-infant interactional commitment			4.01 (0.59)	3.84 (0.72)***	14.69
Father's breastfeeding interactional commitment	2.59 (1.03)	2.84 (1.01)***			13.63
Father infant attachment scale		4.27 (0.38)	4.28 (0.37)	4.30 (0.30)	0.683
Activities with infant		2.27 (0.70)	2.59 (0.59)***	2.77 (0.51)***	85.04
Activities for breastfeeding		2.64 (0.50)	2.70 (0.50)	2.60 (0.47)**	6.168

Note. Significant pairwise comparison of scale scores to previous time point.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Intercorrelations among all full-scale variables associate with manifest variables were examined (Table 4). It was found that fathers' attachment to their infants is positively correlated with father-infant interaction, $r(369) = .30$, $p< .001$, fathers' breastfeeding involvement, $r(369) = .28$, $p < .001$, and infants' developmental outcome, $r(369) = .12$, $p < .001$. Furthermore, fathers' marital relationship quality with their spouses is positively correlated with fathers' attachment to their infants,

$r(369) = .30$, $p < .001$, father-infant interaction, $r(369) = .31$, $p < .001$, and fathers' involvement in breastfeeding, $r(369) = .23$, $p < .001$.

Testing Structural Equation Model - Initial Model

The initial structural equation model can be seen in Figure 3. The fit of the initial model was $\chi^2(221) = 682.76$ $p < .001$, RMSEA = .08, SRMR = .09, CFI = .85, IFI = .86. Model statistics were examined to identify potential changes to the model. First, Standardized Regression Weights were examined (Table 5) to assess the amount of change in the dependent variable based on the predictor variable and it was found that both of the manifest variables of the SES latent variable displayed factor loadings that were low or out of range: the Education manifest variable had a coefficient of 1.373, which lies outside of the normal range |1.00|, and the Housing and Environmental manifest variable had a factor loading of .12, which is much smaller than the conventional continuum that sets a cut off to a value of .40 (Widaman, 1993). Likewise, the Interactional Commitment latent variable displayed relatively unreliable factor loadings: factor loadings for the Father-infant relationship subjective norms and Father's breastfeeding subjective norms were 0.09 and 0.15, respectively. The rest of the manifest variables had factor loadings > 0.52, which is acceptable.

Table 4

Pearson bivariate correlations for the demographical variables, identity theory constructs, marital relationship quality, and infants' development

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Father's age											
2. Father's education	-.136**										
3. Socio-economic status	-.013	.173**									
4. Father's relationship quality	-.154**	.134**	-.016								
5. Father-infant relationship attitudes	-.142**	.117*	.023	-.014							
6. Father's breastfeeding support attitudes	-.026	.185**	.010	.089	.456**						
7. Father-infant relationship subjective norms	-.035	-.078	-.010	.140**	.014	.084					
8. Father's breastfeeding subjective norms	.017	.105*	.003	-.027	.039	.004	.003				
9. Father's attachment to infant	-.081	.118*	.080	.301**	.070	.065	-.015	.057			
10. Father-infant interaction	-.054	.076	-.066	.305**	.075	.045	.199**	-.032	.300**		
11. Father's breastfeeding influence	-.017	.189**	.062	.231**	.111*	.061	.245**	.130*	.278**	.590**	
12. Infant development	-.004	.044	.077	.135**	.048	.045	.100	.040	.117*	.047	.079

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 5

Standardized Regression Weights (Beta), Estimates, Standard Errors, and p values

			Beta	Estimate	S.E.	P
Affective Commitment	<---	Marital Relationship Quality	.088	.034	.027	.200
Affective Commitment	<---	Socioeconomic Status	.159	.206	.099	*
Psychological Centrality	<---	Affective Commitment	.108	.136	.085	.111
Psychological Centrality	<---	Interactional Commitment	.185	1.376	5.762	.811
Role Performance	<---	Affective Commitment	.064	.084	.084	.319
Role Performance	<---	Marital Relationship Quality	.263	.134	.029	***
Role Performance	<---	Psychological Centrality	.313	.326	.068	***
Infant Development	<---	Role Performance	.039	.265	.500	.596
Infant Development	<---	Psychological Centrality	.187	1.310	.541	*
Father-infant attitudes	<---	Affective Commitment	.588	1.000		
Breastfeeding attitudes	<---	Affective Commitment	.762	1.827	.584	**
Infant subjective norms	<---	Interactional Commitment	.091	1.000		
Breastfeeding norms	<---	Interactional Commitment	.153	2.894	10.832	.789
Housing survey	<---	Socioeconomic Status	.123	1.000		
Education	<---	Socioeconomic Status	1.373	6.501	20.991	.757
Intimacy	<---	Marital Relationship Quality	.857	1.000		
Satisfaction	<---	Marital Relationship Quality	.882	1.018	.046	***
Trust	<---	Marital Relationship Quality	.899	1.009	.044	***
Commitment	<---	Marital Relationship Quality	.807	.891	.047	***
Attachment quality	<---	Psychological Centrality	.951	1.000		
Hostility absence	<---	Psychological Centrality	.535	.683	.092	***
Interaction pleasure	<---	Psychological Centrality	.528	.643	.087	***

Savvy	<---	Role Performance	.684	1.000		
Helping	<---	Role Performance	.695	.957	.080	***
Presence	<---	Role Performance	.700	1.372	.115	***
Responsiveness	<---	Role Performance	.703	.891	.074	***
Affection	<---	Role Performance	.713	.965	.079	***
Play	<---	Role Performance	.761	1.307	.101	***
Caregiving	<---	Role Performance	.714	1.241	.102	***
Motor	<---	Infant Development	.607	1.000		
Language	<---	Infant Development	.593	.708	.112	***
Personal social	<---	Infant Development	.609	.834	.132	***

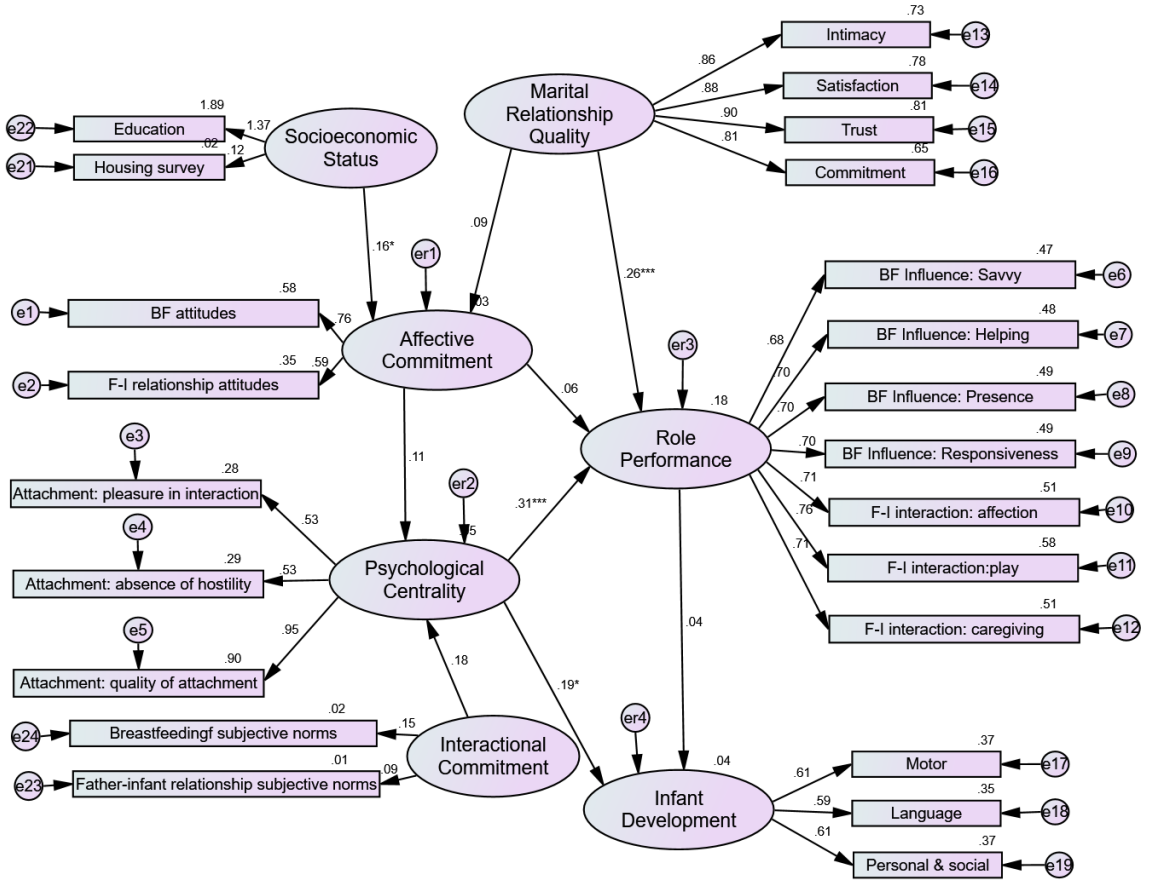
Note. SE – Standard Error.

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Second, standardized residual covariances (the difference between the sample covariance and the model-implied covariance) (Ullman, 2006) were examined, and it was found that both manifest variables of the SES and both manifest variables of the Interactional Commitment measures had standardized residuals that exceeded the acceptable range of |2.00|.

Because of the poor factor loadings associated with these variables, adjustments were made to the structural equation model.

Figure 3 *Initial structural equation model of the fathers' involvement and infants' development using identity theory with standardized coefficients*



Revised Model

The revised model can be found in Figure 4. After the adjustments that included: deletion of the aberrant latent variables SES and Interactional commitment, and associated pathways, the revised model fit was $\chi^2(145) = 527.99$, $p < .001$, RMSEA = .09, SRMR = .08, CFI = .88, IFI = .88. For this model, the RMSEA coefficient was .09 which indicates a reasonable error of approximation, given the sample size (N=370). SRMR is an absolute measure of fit, where lower value indicates better fit; it has no penalty for model complexity, and a value of .08 that was found for the present model is acceptable. CFI value of .88 and IFI value of .88 are very close to 1, and indicate a good fit of the model. The variance in the structural equation model was accounted for in all endogenous and exogenous variables, the variance values for each of the variables in the model ranged as follows: Affective Commitment .42-.49, Psychological centrality .28-.92, Role performance .47-.58, Marital relationship quality from .65-.81, Infants' development .35-.37.

The following model paths had significant positive structural paths:

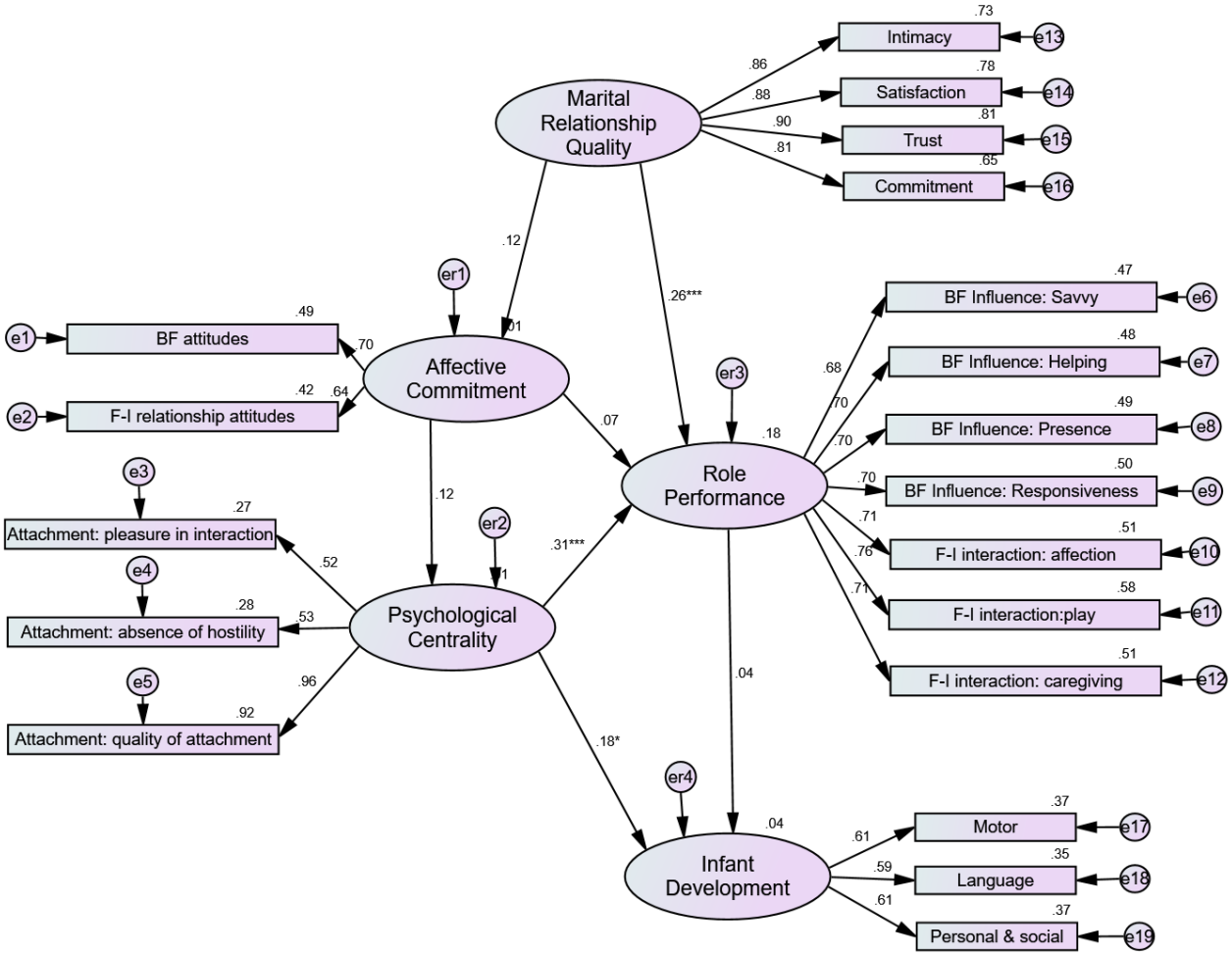
- Psychological Centrality to Role Performance (.31, $p < .001$)
- Psychological Centrality to Infants Development (.18, $p = .02$)
- Marital Relationship Quality to Role Performance (.26, $p < .001$)

Assessment of the hypotheses

Hypothesis 1 states that fathers' affective commitment influences father's role performance directly, and according to the results there was a positive relationship, however, the model path was not significant, $\beta = .07$, ns. Furthermore, affective commitment affects role performance indirectly through a positive, although non-significant, relationship with psychological centrality $\beta = .12$, ns. Hypothesis 2

argues that fathers' interactional commitment influences fathers' psychological centrality, and in the initial model this path was positive, yet not significant, $\beta = .19$, ns. Hypothesis 3 predicts a positive relationship between psychological centrality and role performance, and from the analysis it is evident that there is a positive significant relationship between these two variables ($\beta = .31$, $p < .001$). Hypothesis 4 states that marital relationship quality affects fathers' role performance, and the analysis confirmed the positive correlation between these variables ($\beta = .26$, $p < .001$). Hypothesis 5 argues that socioeconomic status of the family influences father's affective commitment, and the analysis of the initial model displayed a positive relationship ($\beta = .16$, $p < .05$), however, the SES variable was deleted from the analysis due to a number of statistical considerations, and was not analyzed in the revised model. Hypothesis 6 states that fathers' psychological centrality affects their children's development, and this relationship was found to be significant ($\beta = .18$, $p < .05$). Hypothesis 7 predicts that fathers' role performance affects their children development, and although the relationship was positive, it was not significant ($\beta = .04$, ns).

Figure 4 *Revised structural equation model of the fathers' involvement and infants' development using identity theory with standardized coefficients*



Chapter 5 – Discussion

The aim of this study was twofold: first, to examine factors that affect fathers' direct and indirect involvement with infants using Identity theory; second, to analyze the extent to which fathers' involvement during the first nine months of their infants' lives affects infants' development.

Fathers' Commitment and Psychological Centrality in relation to Role Performance

In order to achieve the first goal of the study identity theory constructs, which included: affective commitment (fathering attitudes), psychological centrality (fathers' attachment to infants), role performance (fathers' involvement with infants), and additional construct - marital relationship quality, were examined using repeated measures analysis, t-test, bivariate correlations, and structural equation modeling.

Affective commitment is somewhat but not significantly associated with psychological centrality and with role performance. Hence, the hypothesis 1, that argued that fathers' affective commitment affects psychological centrality, was not supported by the structural equation modeling in the present this study. One possible explanation for the lack of a significant effect may be that affective commitment measures were collected at the baseline – during the prenatal period, and fathering attitudes may have changed after they had their babies; as a result, affective commitment measures collected at the baseline and psychological centrality measures collected at 4 months are not significantly associated.

Interactional commitment and its association with psychological centrality was examined as a part of the identity theory model using structural equation modeling and through bivariate correlations. Based on the bivariate correlations analysis it was

discovered that interactional commitment regarding father-infant interaction has a positive correlation with fathers' role performance toward father-infant interaction, and interactional commitment regarding breastfeeding practices has a positive correlation with fathers' role performance toward breastfeeding support. These relationships were not originally considered in this study due to the lack of the evidence of these correlations in the literature and previous studies, but from these findings it is evident that support from the fathers' social network affects the frequency of their involvement with infants and breastfeeding support. Therefore, more supportive fathers' social network motivates fathers' to be more involved with their infants.

With regard to the structural equation modeling, the interactional commitment latent variable was deleted from the analysis in the revised model, thus, it is difficult to make a definitive conclusion with regard to the causational connection between the interactional commitment and fathers' psychological centrality as a part of the identity theory model. The presence of the methodological issues with interactional commitment, such as low factor loadings, can be explained first by the fact that the manifest variables used to represent this manifest variable were collected at different stages of study, thus, were poorly related; and second, by the fact that the number of items representing this construct was limited, thus, it may have resulted in underrepresentation of the fathers' support from the social network. Therefore, the study did not provide support for a direct relationship between interactional commitment and psychological centrality, and hypothesis 2 was not supported. Moreover, previous empirical evidence supports the decision of deleting the interactional commitment construct from the model, given that other authors did not find the relationship between interactional commitment and psychological centrality

(Pasley, et al., 2002). For example, Pasley et al. (2002) used slightly different measures for this construct, and, given the cross-sectional design of their study, they did not have the same methodological issues, yet the relationship between interactional commitment and psychological centrality was not found.

With regard to the relationship between fathers' psychological centrality and role performance, based on the results from the structural equation model, a positive significant relationship was found. Therefore, hypothesis 3 that postulated that fathers' psychological centrality affects role performance was supported by the findings. The centrality of the father identity, as indicated by their attachment, serves as a factor for the frequency of the fathers' involvement. In other words, more emotionally attached fathers tend to spend more time with their children, and tend to be more supportive in terms of the mothers' decisions about breastfeeding. Thus, an increase of fathers' emotional attachment to their infants results in greater fathers' direct and indirect involvement with their infants. One possible explanation of this finding comprises the likelihood that fathers' emotional attachment to their infants affects their decisions about the frequency of their involvement with infants. It is important to note that the relationship between psychological centrality and role performance may be reciprocal in nature, as fathers who perhaps had to spend more time with their children had become more attached to them, and vice versa – fathers who were more attached to their infants decided to spend more time with them. As a result of the repeated measures analysis, it was found that the frequency of the fathers' involvement increased for over 20% from the first month to ninth months of their infants' lives. This tendency can be interpreted in terms of the fathers' confidence and competence, in other words, as the baby grows, fathers' become more comfortable with spending more time with their babies.

The value of incorporating the marital relationship quality construct in the expanded identity theory model was supported by the presence of positive associations with father's role performance and psychological centrality. Most participants were evaluating marital relationships with their partners as highly satisfactory, as demonstrated by the positively skewed distributions of the marital relationship quality construct. A skewed distribution is a common pattern for studies of marital satisfaction (Lee & Doherty, 2007). Marital relationship quality played a very important role in the father-infant interaction and it was found that better relationships between spouses led to greater levels of the fathers' involvement with infants. These findings provide support to hypothesis 4: better relationships between spouses have a positive effect on the frequency of the father-infant interaction. As a result of the bivariate correlation analysis it was also found that the marital relationship quality construct has a positive correlation with fathers' attitudes toward father-infant interaction and fathers' attachment to the infant. Moreover, spousal relationships have a positive correlation with fathers' breastfeeding support, and better relationships between spouses are associated with greater support that fathers' provide to their wives in terms of the supporting their decision to breastfeed. To summarize, marital relationship quality affects father-infant relationship to a great extent. Therefore, improving spousal relationship through educational interventions for families can positively affect fathers' relationships with their infants and fathers' involvement in breastfeeding.

Socioeconomic status of the family was examined in the structural equation model, however, due to a number of statistical issues with the measurement component of the socioeconomic construct, this variable was deleted from the revised model, thus, its role in an expanded identity theory model cannot be interpreted.

Socioeconomic status was measured using housing and environmental scales and fathers' level of education; from the analysis it is evident that these two manifest variables might be not sufficient to represent such a complex construct as socioeconomic status, since several particular factors including family's income and fathers' occupation were not considered, and in previous studies it was suggested to consider those factors when measuring socioeconomic status. From the bivariate correlation analysis, it was found that generally in families with higher socioeconomic status fathers had more positive attitudes toward their involvement with infants. However, further and more in depth analysis of the role of socioeconomic status in fathers' involvement should take place in order to draw more definitive conclusions.

To summarize, based on the analysis of the structural equation model of the factors that affect fathers' involvement it was found that psychological centrality and marital relationship quality affect fathers' involvement to a greater extent. Psychological centrality appears to be a predominant construct that intermediates the association between affective commitment and marital relationship quality in relation to the fathers' role performance. In other words, although more positive fathering attitudes and better marital relationships between spouses have an effect on fathers' involvement, fathers' attachment to the infant plays the most important role in quantity of the father-infant interaction and fathers' support of the breastfeeding practices.

Fathers' Psychological Centrality and Role Performance in relation to Infants' Development

Fathers' psychological centrality influences infants' development, thus, based on the findings hypothesis 6 was supported. Greater fathers' attachment to their infants positively affects infants' physical and cognitive development. Therefore,

increasing fathers' emotional connection to their infants through educational components of family interventions can lead to a better infants' development.

Fathers' role performance positively affects infants' development, however, hypothesis 7 was not supported by the findings as this path coefficient was positive yet not significant. These findings suggest that the quantity (or the frequency) of the fathers' involvement with infants that was measured to represent the fathers' role performance latent variable, might not be of a great importance for infants' developmental outcomes. In contrast, the quality of the fathers' involvement, and the extent of the fathers' attachment to the infant in particular, has a significant influence on the infants' development.

To conclude, based on the structural equation model results of the factors that affect infants' development, it was observed that more emotionally attached fathers are substantially improving their infants' developmental outcomes not through the frequency of their involvement with infants but more importantly through the emotional quality of their attachment. Providing fathers with positive experiences with their infants at birth and educating fathers how to be more responsive to their infants' needs could improve the quality of their attachment and involvement with infants (Rempel et al., 2015).

Discussion of the Identity Theory

Overall, application of the identity theory as a framework for examining fathers' involvement in infants' development yields interesting findings with regard to the factors that appear to be of a primary importance to the fathers' direct and indirect involvement with infants and infants' developmental outcomes.

The psychological centrality construct from the identity theory appears to be the most prevalent factor in terms of the fathers' role performance and infants'

developmental outcomes. Psychological centrality was proposed as a central construct of the identity theory model in previous studies (Bretherton et al., 2005; Goldberg, 2015; Pasley et al., 2002), as it establishes the centrality of an attributed role to a person. The importance of a fathering role to a man's identity is associated with a greater fathers' attachment to their infants. In other words, a prominence of a father status among other statuses that a man acquires in his life determines the extent to which a man is attached to his role as a father, and consequently to his child. The extent to which fathers care about their infants in its turn has the greatest influence on the father-infant interaction, fathers' involvement in breastfeeding support and infants' physical and cognitive development. Hence, a man's conception of himself as a father among other statuses (e.g. friend, worker, son, etc.) influences the quality of the attachment and the extent of the behaviour that will be enacted with regard to the infant and breastfeeding support.

The affective commitment construct from the identity theory is an important factor that affects both psychological centrality and role performance (Pasley et al., 2012), however, in this particular study fathering attitudes were not found to be a significant factor when analyzing structural equation model of the fathers' involvement in infants' development as a whole. The reason for that might be that affective commitment was measured through fathering attitudes rather than through the fathers' perception of their spouses' opinions as, was proposed by Pasley et al. (2002). Another explanation for these results could simply be that fathers' affective commitment affects only certain aspects of their psychological centrality and role performance, or that fathering attitudes measured prenatally are not representative of the fathers' emotional attachment or behaviour postpartum. More specifically, for the attitudes, fathers were asked to indicate their agreement with a variety of statements

(e.g., “I like to help my baby explore and learn”, “The most important thing that a father can do is to provide for his baby’s basic physical needs”, “During the first 6 months of age, mother’s breast milk is enough to satisfy infant’s need”), and perhaps the way fathers assessed their attitudes was not representative of their actual actions and emotions. Finally, attitudes were measured prenatally – before the baby was born, and they may not have been associated with the postpartum attachment or behaviour. More specifically, fathers who did not have children previously or have had very limited experience with children may have had a vague idea of the possible extent of their involvement with their newborn infants, thus, their actual behaviour after their babies were born was not associated with the prenatal attitudes.

The role performance construct from the identity theory model plays an important role, but ultimately it is not as important for the best infant developmental outcomes. When examined using the structural equation model, psychological centrality appears to be more predominant compared to role performance. A number of authors have examined the association between fathers’ involvement and infants’ development and concluded that there is a positive relationship between these two constructs (Bretherton et al., 2005; Pougnet et al., 2011; Ryan et al., 2006). However, as an extension of the identity theory, this relationship was never analyzed before, and evidently, when role performance and infants’ development variables are examined in a model with consideration of psychological centrality, the fathers’ frequency of involvement with infants is found to be of a less importance than their emotional attachment to infants.

Marital relationship quality was an additional construct that was added based on the findings from the previous studies on fathers’ involvement, and based on the findings from the present study marital relationship quality is an important factor that

affects fathers' role performance. The relationships between spouses can have a positive influence on the frequency of the father-infant interaction, and fathers' support of the breastfeeding practices. Therefore, as a construct marital relationship quality adds a theoretical and practical value to identity theory.

Finally, incorporation of the infants' developmental outcome construct in the model of the fathers' involvement allowed a deeper understanding of the factors that have the greatest importance for children. Whilst a number of authors examine the fathers' involvement as a main outcome (Pougnet et al, 2011; Shwalb et al., 2013; Wilson & Prior, 2011), the effects on the most important concept, which is child development have not been analyzed. The findings from this study suggest that fathers' attachment to the infant is the most important factor that affects both fathers' involvement and infants' development.

Limitations and Future Research

Though this study provides a deeper understanding of the factors that affect fathers' involvement and its relation to infants' development, the interpretation of the results should be considered in light of several limitations, and consideration of these limitations may offer suggestions for the future research on fathers' involvement.

In the present study secondary data was used to examine the theoretical model of the factors that affect fathers' involvement and infants' development. Given the nature of the study, some of the latent variables from the identity theory had to be 'fitted' to the available manifest variables. There are many possible ways to represent each of the latent variables. For example, in the present study the affective commitment construct from the identity theory was measured using two manifest variables: fathers' breastfeeding attitudes and father-infant relationship attitudes, whereas Pasley et al. (2002) suggested to use measures of the fathers' perceptions of

their spouses' opinions about their competence and spouses' satisfaction of them as fathers. Although Pasley's et al. (2002) suggestions for measuring affective commitment might be challenged for a number of reasons (e.g. fathers' opinions about their spousal's attitudes is not a direct measure of the fathering attitudes), it is an option that should be considered in the future research.

Furthermore, fathers' role performance was measure using scales of the frequency of the fathers' involvement, however, it might be valuable to measure the quality of the father-infant interaction and fathers' support of breastfeeding practices. For example, one of the ways to measure the quality of the fathers' involvement could be through offering fathers the opportunity to rank the activities that would be the most beneficial for their infants' development, and then examine the extent to which fathers reported to be involved in essential father-infant interactive activities that represent the quality of their involvement.

The interactional commitment concept from the identity theory was excluded from the revised model due to poor factor loadings and fit in model. One of the reasons for poor factor loadings might be the choice of the manifest variables: Stryker (1987) argued that interactional commitment represents a number of social connections that are identified with a particular role, whereas in this study, social network encouragement for father involvement with infants and in breastfeeding practices were used as manifest variables. In the present study two manifest variables that were used to represent interactional commitment were collected at two different time points (1 month and 4 months), thus, it may have caused the statistical issues that led to elimination of this construct from the revised model. Researchers did consider the possibility of measuring these items at several stages of data collection, and in order to avoid the questionnaires being overly demanding for the participants, some of

the measures were collected only at baseline and 1-month (interactional commitment regarding breastfeeding), and others – at 4-months and 9-months postpartum (father-infant interactional commitment).

In addition, the socioeconomic status latent variable might be improved by measuring fathers' occupation and family income in addition to housing and environmental scales and fathers' education.

Moreover, several variables were measured using very few items (e.g., interactional commitment, affective commitment, and socioeconomic status), which might have reduced the amount of variability for analyses.

Another limitation is the availability of the longitudinal data at each of the time points during the data collection (baseline – before the baby was born, and 1 month, 4 months, 9 months postpartum). While it would have been beneficial to use cross-sectional data, given the complexity of the analysis and the use of structural equation modeling, in this study longitudinal data was used, and it was impossible to use all of the variables from the same stage of the data collection**.** Thereby, for the affective commitment construct, data from the baseline was used, for interactional commitment, both 1 and 4 month data was used, for psychological centrality, role performance, and marital relationship quality, 4 months postpartum data was used, and finally for the infants' development, 9 months postpartum data was used. Use of data from consecutive time points does allow the ability to draw more definitive conclusions about the plausible direction of effects between the theoretical constructs in the model, which is very beneficial for the study, however, it complicates the model to a great extent, and it is difficult to conclude about the fit of the theoretical model to the data that were used in the present study. In other words, the benefit of using different time points of data in a model includes the opportunity of examining

the causational connections between the variables. However, in order to test the fit of the theoretical model to the sample (and perhaps a greater population), a purely cross-sectional design might have provided a stronger model fit: as time passes, fathers' attitudes, attachment and involvement are changing since there is a number of factors that can alter fathering attitudes, and comparing scores for these variables at different stages of data collection might demonstrate attenuated effects and relationships between the theoretical constructs. It is important to note, however, that using longitudinal data may reduce the effects of the social desirability and the possibility of the multicollinearity issues (where predictor variables in the model are highly correlated).

Finally, given that the data was collected in Vietnam using Western measures that were translated into Vietnamese language, there is a possibility of measurement and interpretation issues in the data. Several practical problems might occur when adapting measures into a different language, such as lack of semantic equivalence across languages and cultural peculiarities that might affect how potential participants will understand the questions that they are asked. Translation was made by a committee, and then the original researchers had a joint meeting where items that were hard to translate were discussed. The goal of translation was to save the conceptual ideas from the items, and at the same time to adapt them to the cultural context. Nevertheless, from the practical point of view there is a possibility that some of the questionnaires were misunderstood by the participants due to a number of reasons, including translation issues or cultural aspects.

Future research on fathers' involvement in infants' development using identity theory can be done to mitigate above mentioned limitations by conducting a longitudinal study with data for each of the theoretical constructs to be collected at

each of the possible time points. It would provide an opportunity to examine the identity theory using both cross-sectional data for a better understanding of the data fit to the structural equation model and longitudinal data for a better understanding of the causational connections in the model and directions of the effects between constructs. Furthermore, more in-depth and diverse manifest variables might be used to represent each of the manifest variables; greater number of the manifest variables might improve the variability in the model.

Strengths and Implications of the Findings

The study examined fathers' affective commitment, psychological centrality, and role performance in relation to infants' developmental outcomes in Vietnam. It was found that psychological centrality (father's emotional attachment) and relationship quality affect role performance (engagement in father's role). Furthermore, psychological centrality influences directly infants' developmental outcomes.

From the theoretical standpoint, this study contributes to understanding of the factors that affect fathers' involvement with their children and support of their spouses' breastfeeding decisions in an Asian context. Most importantly, this study provides evidence that the quality of the fathers' attachment is paramount for the infants' development (rather than the quantity of the fathers' involvement). The identity theory model of fathers' involvement can be used to broaden the understanding of the fathering in Vietnam and other countries. Similar to findings from the Western studies where identity theory was used to examine fathers' involvement (Goldberg, 2015; Pasley et al., 2002), in the present study, fathers' psychological centrality played a crucial role in role performance. Parenting, and fathering in particular is different for every culture, however, implications of the

testing the identity theory in the present study provide strong support to the fact that the proposed theoretical framework can be used for diverse applications across different cultures. Vietnamese fathers specifically tend to be more involved with their infants if they feel more attached to their father's role identity. In addition, marital relationship quality appears to be an important factor of the fathers' involvement across cultures and in Vietnam likewise, where better relationships between spouses are associated with greater father-infant interaction and greater fathers' support of their spouses' breastfeeding decisions. Moreover, originality of this study is in the fact that the identity theory model of fathers' involvement was tested prenatally and during the first 9-months during the infancy, and it revealed what factors are the most influential on the fathers' involvement during the first few months of a baby's life. A number of factors such as psychological centrality and marital relationship quality were found to be important indicators of the frequency of the breastfeeding support that fathers provide to their spouses.

A theoretical innovation of this study is in extending the original identity theory (Stryker, 1968) and identity theory of fathers' involvement (Pasley et al., 2002). Marital relationship quality and the infant development constructs enhance the identity theory of fathers' involvement. First, consideration of the marital relationship quality between spouses provides more diverse and thorough representation of the factors that affect fathers' behaviour (in addition to affective commitment and psychological centrality). Second, inclusion of the infants' development construct revealed that fathers' role performance and the frequency of the fathers' involvement with infants are not as important as it was previously suggested (Pougnet et al, 2011; Shwalb et al., 2013; Wilson & Prior, 2011). The most important construct is psychological centrality and fathers' emotional attachment to the infant and to his role

identity as a father, which affects infants' physical and cognitive development to a great extent.

To summarize, examination of the extended identity theory model demonstrates the value of incorporating additional theoretical constructs of marital relationship quality and infants development to the model.

From the practical standpoint, the identity theory model of fathers' involvement in infants' development can be used to develop programs aiming to increase the level of fathers' involvement in Vietnam and possibly other countries with similar cultural context. Policy makers and practitioners can develop programs aiming to improve the quality of the fathers' attachment, rather than the quantity of the fathers' involvement as it is suggested in a number of other studies on fathers' involvement (Goldberg, 2015; Pasley et al., 2002). Furthermore, social programs should focus on the importance of the father's role identity to a man among other roles that a man possesses, as it was found to be the most prevalent factor in fathers' behaviour and infants' development. In addition, it would be valuable to include mothers in these programs as it was found that marital relationship quality plays an important role in forming fathering attitudes and fathers' behaviour.

Conclusion

This study examined factors that affect fathers' involvement and its relation to infants' development in Vietnam using Identity theory and several additional theoretical constructs. It was found that greater levels of the fathers' psychological centrality are associated with greater fathers' direct and indirect involvement with their infants. In addition, role performance is positively correlated with marital relationship quality. Furthermore, psychological centrality affects directly infants' cognitive and physical development. Psychological centrality was represented by a

quality of the fathers' emotional bond with their infants, and the ascribed importance of a father role identity to a man, marital relationship quality was represented by a quality of the fathers' emotional bond with their spouses, and it was found that both fathers' attachment to infants and fathers' emotional connection with their spouses are very important factors that influence fathers' involvement with infants and infants' development.

This study contributes to the previous theoretical and empirical research on fathering and identity theory by suggesting that fathers' psychological centrality is the most predominant factor of the fathers' involvement. Furthermore, marital relationship quality and infants' development were the additional variables that were tested as a part of the identity theory, and their inclusion to the theory was empirically supported. Therefore, this research provides an improved theoretical framework for understanding factors that affect fathers' involvement and infants' development in Vietnam and globally. Social programs aiming to increase fathers' involvement can use this framework to implement educational components for families in order to reinforce men's centrality of their role identity as a father.

References

Allison, P. D. (2002). Missing data. Thousand Oaks, CA: Sage Publications.

Almroth, S., Arts, M., Nguyen Dinh, Q., Pham ThiThuy, H., & Williams, C. (2008). Exclusive breastfeeding in Vietnam: an attainable goal. *ActaPaediatrica*, *97*(8), 1066-1069.

Amato, P. R., & Fowler, F. (2002). Parenting Practices, Child Adjustment, and Family Diversity. *Journal of Marriage and Family*, (3). 703.

Aron, A., Aron, E. N., &Smollan, D. (1992). Inclusion of other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*, 596–612.

Avery, A., & Magnus, J. (2011). Expectant fathers' and mothers' perceptions of breastfeeding and formula feeding: a focus group study in three US cities. *Journal of Human Lactation,* 27, 147–154.

Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence, 11,* 56-95.

Barnett, R. C., & Baruch, G. K. (1987). Determinants of Fathers' Participation in Family Work. *Journal of Marriage and Family*, *1*, 29.

Baruch, G. K., & Barnett, R. C. (1981). Fathers' participation in the care of their preschool children. *Sex Roles*, *7,* 1043-1055.

Bayley, N. (1993). *Bayley scales of infant development* (2nd ed.). New York, NY: The Psychological Corporation.

Belsky, J. (1979). Mother–father–infant interaction: A naturalistic observation study. *Developmental Psychology, 15*, 601–607.

Benson, J., & Fleishman, J. A. (1994). The robustness of maximum likelihood and distribution-free estimators to non-normality in confirmatory factor analysis. *Quality & Quantity, 28*(2), 117.

Bich, T. (2008). Relationship between paternal involvement and child malnutrition in a rural area of Vietnam. *Food& Nutrition Bulletin, 29* (1), 59-66.

Bich, T., Hoa, D., & Maiqvist, M. (2014). Fathers as supporters for improved exclusive breastfeeding in Viet Nam. *Maternal And Child Health Journal, 6,* 1444-1453.

Blair, S., Wenk, D. & Hardesty, C. (1994). Marital quality and paternal involvement: Interconnections of men's spousal and parental roles. *Journal of Men's Studies*, *2*(3), 221-237.

Bornstein, M. (Ed.). (2002). *Handbook of parenting, Vol. 1: Children and parenting* (2nd ed., pp. 3–43). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Bowlby, J. (1951). Maternal care and mental health. *World Health Organization Monograph* (Serial No. 2).

Braungart-Rieker, J. M., Zentall, S., Lickenbrock, D. M., Ekas, N. V., Oshio, T., & Planalp, E. (2014). Attachment in the making: Mother and father sensitivity and infants' responses during the Still-Face Paradigm. *Journal Of Experimental Child Psychology*, 12563 84.doi:10.1016/j.jecp.2014.02.007

Brenner, P., Serpe, R., & Stryker, S. (2014). The Causal Ordering of Prominence and Salience in Identity Theory: An Empirical Examination. *Social Psychology Quarterly, 77*(3), 231-252.

Bretherton, I., Lambert, J., & Golby, B. (2005). Involved fathers of preschool children as seen by themselves and their wives: Accounts of attachment,

socialization, and companionship. *Attachment & Human Development, 7*(3), 229-251.

Brown, A., & Davies, R. (2014). Fathers' experiences of supporting breastfeeding: challenges for breastfeeding promotion and education. *Maternal & Child Nutrition*, *10*(4), 510-526.

Brown, A. & Lee, M. (2011) An exploration of the attitudes and experiences of mothers in the United Kingdom who chose to breastfeed exclusively for 6 months postpartum. *Breastfeeding Medicine, 6*(4), 197– 204.

Brown, A.E., Raynor, P. & Lee, M.D. (2011c) Young mothers who do breastfeed: the importance of a supportive peer network. *Midwifery*, 27(1), 53–59

Browne, M. W., &Cudeck, R. (1992). Alternative Ways of Assessing Model Fit. *Sociological Methods & Research, 21*(2), 230.

Buckley, C. K., & Schoppe-Sullivan, S. J. (2010). Father involvement and coparenting behavior: Parents' nontraditional beliefs and family earner status as moderators. *Personal Relationships*, *17*(3), 413-431.

Boe, T., Sivertsen, B., Heiervang, E., Goodman, R., Lundervold, A. J., &Hysing, M. (2014). Socioeconomic Status and Child Mental Health: The Role of Parental Emotional Well-Being and Parenting Practices. *Journal Of Abnormal Child Psychology*, (5), 705.

Cabrera, N., Fitzgerald, H.E., Bradley, R.H., & Roggman, L. (2007). Modeling the dynamics of paternal influence on children over the life course. *Applied Developmental Science, 11*(4), 185-189.

Cabrera, N. J., Tamis-LeMonda, C. S., Bradley, R. H., Hofferth, S., & Lamb, M. E. (2000). Fatherhood in the Twenty-First Century. *Child Development*, 71(1). 127.

Cassidy, C., & Trew, K. (2001). Assessing Identity Change: A Longitudinal Study of the Transition from School to College. *Group Processes & Intergroup Relations, 4*(1), 49.

Cassidy, C., & Trew, K. (2004). Identity Change in Northern Ireland: A Longitudinal Study of Students' Transition to University. *Journal Of Social Issues, 60*(3), 523-540.doi:10.1111/j.0022-4537.2004.00370.x

Coley, R. L., & Morris, J. E. (2002). Comparing father and mother reports of father involvement among low-income minority families. *Journal of Marriage and Family, 64,* 982 – 997

Collins, W. A., Maccoby, E. E., Steinberg, L., Hetherington, E. M., & Bornstein, M. H. (2000). Contemporary Research on Parenting: The Case for Nature and Nurture. *The American Psychologist*, (2), 218.

De Wolff, M. S., & van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68,* 571–591.

DeLamater, J. D. (2006). *Handbook of social psychology* [electronic resource] New York: Springer.

Dotterer, A. M., Iruka, I. U., &Pungello, E. (2012). Parenting, Race, and Socioeconomic Status: Links to School Readiness. *Family Relations*, *61*(4), 657-670.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes.* Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.

Fagan, J., & Barnett, M. (2003). The relationship between maternal gatekeeping, paternal competence, mothers' attitudes about the father role, and father involvement. *Journal of Family Issues*, 24(8), 1020.

Fazio, R. H., & Petty, R. E. (2007). *Attitudes: their structure, function, and consequences.* New York: Psychology Press.

Fox, G. L., & Bruce, C. (2001). Conditional Fatherhood: Identity Theory and Parental Investment Theory as Alternative Sources of Explanation of Fathering. *Journal of Marriage and Family*, 63(2). 394.

Furstenberg, F. F., Jr., & Nord, C. W. (1985). Parenting apart: Patterns of childrearing after marital dissolution. *Journal of Marriage and the Family, 47,* 893–904.

Gartner, L. M., Morton, J., Lawrence, R. A., et al. (2005). Breastfeeding and the use of human milk. *Pediatrics, 115*(2), 496–506.

Goldberg, J. S. (2015). Identity and Involvement Among Resident and Nonresident Fathers. *Journal of Family Issues, 36*(7), 852-879.doi:10.1177/0192513X13500963

Goldschieder, F. & Waite, L. (1991). *New families, no families: the transformation of the American home.* Berkeley, CA: University of California Press.

Goodsell, T. L., & Meldrum, J. T. (2010). Nurturing Fathers: A Qualitative Examination of Child-Father Attachment. *Early Child Development and Care,180* (1-2), 249-262.

Greenberg, J. R., & Mitchell, S. A. (1983). *Object relations in psychoanalytic theory.* Cambridge, MA: Harvard University Press.

Grossmann, K., Grossmann, K.E., Kindler, H., & Zimmermann, P. (2008). A wider view of attachment and exploration: The influence of mothers and fathers on the development of psychological security from infancy to young adulthood. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment:*

Theory, research, and clinical applications (2nd ed., pp. 857–879). New York: The Guilford Press.

Grych, J., & Clark, R. (1999). Maternal employment and development of the father-infant relationship in the first year. *Developmental Psychology*, *35*(4), 893-903.

Habib, C. (2012). The transition to fatherhood: A literature review exploring paternal involvement with identity theory. *Journal of Family Studies*, 18(2-3), 103.

Hammervold, R., & Olsson, U. (2012). Testing structural equation models: the impact of error variances in the data generating process. *Quality & Quantity, 46*(5), 1547-1570.

Hauck, Y. (2004). Factors influencing mothers' decision to breastfeed in public. Breastfeeding Review. *Professional Publication of the Nursing Mothers' Association of Australia*, 12, 15–23.

Hess, M., Ittel, A., &Sisler, A. (2014). Gender-specific macro- and micro-level processes in the transmission of gender role orientation in adolescence: The role of fathers. *European Journal of Developmental Psychology*, *11*(2), 211-226.

Holden, G. W., & Edwards, L. A. (1989). Parental attitudes toward child rearing: Instruments, issues, and implications. *Psychological Bulletin, 106,* 29-58.

Hofvander, Y. (2005). Breastfeeding and the baby friendly hospitals initiative (BFHI): Organization, response and outcome in Sweden and other countries. *Acta Paediatrica, 94*(8), 1012–1016 (Comparative Study).

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3,* 424–453.

Huong, B.T. 2010. ‘Lets talk about sex, baby’: Sexual communication in marriage in contemporary Vietnam. *Culture, Health and Sexuality, 12*, 591–601.

Ihinger-Tallman, M., Pasley, K., & Buehler, C. (1993). Developing a middle-range theory of father involvement post-divorce. *Journal of Family Issues, 14,* 550 –571.

Jain, A., Belsky, J., &Crnic, K. (1996). Beyond fathering behaviors: Types of dads. *Journal of Family Psychology*, *10*(4), 431-442. doi:10.1037/0893-3200.10.4.431

Jayakody, R., & Phuong, P. (2013). Social change and fathering: change or continuity in Vietnam? *Journal of Family Issues*, 34(2), 228-249

Keating, D., &Hertzman, C. (1999). *Developmental health and the wealth of nations: Social, biological, and educational dynamics.* New York, NY: Guilford.

Kramer, M. S., &Kakuma, R. (2012). Optimal duration of exclusive breastfeeding. *Cochrane Database of Systematic Reviews, 8*.

Lam, L. W., & Liu, Y. (2014). The identity-based explanation of affective commitment. *Journal of Managerial Psychology, 29*(3), 321-340.doi:10.1108/JMP-02-2012-0036

Lamb, M. E. (1977). Father-Infant and Mother-Infant Interaction in the First Year of Life. *Child Development*, *48*(1), 167-181.

Lamb, M. M. (2012). Mothers, Fathers, Families, and Circumstances: Factors Affecting Children's Adjustment. *Applied Developmental Science*, *16* (2), 98-111. doi:10.1080/10888691.2012.667344

Lamb, M. E. (1986). The changing role of fathers. In M. E. Lamb (Ed.), *The father’s role: Applied perspectives* (pp. 3-27). New York: John Wiley.

Lamb, M. E. (1997). The role of the father in child development (3rd ed.). New York: John Wiley.

Lamb, M. E., Pleck, J. H., Charnov, E., & Levine, J. A. (1985). Paternal behavior in humans. *American Psychologist, 25*, 883 – 894.

Landry, S. H., Smith, K. E., Swank, P. R., Assel, M. A., &Vellet, S. (2001). Does early responsive parenting have a special importance for children's development or is consistency across early childhood necessary? *Developmental Psychology, 37,* 387–403.

LaRossa, R., & Reitzes, D. C. (1993).Symbolic interactionism and family studies. In G. P. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz, (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 135–162). New York, NY: Plenum Press.

Lee, C. S., & Doherty, W. J. (2007). Marital satisfaction and father involvement during the transition to parenthood. *Fathering*, *5*, 75–96.

Letourneau, N. L., Duffett-Leger, L., Levac, L., Watson, B., & Young-Morris, C. (2013). Socioeconomic Status and Child Development: A Meta-Analysis. *Journal of Emotional and Behavioral Disorders*, *21*(3), 211-224.

Levine, L. V., Tuber, S. B., Slade, A., & Ward, M. J. (1991). Mothers' mental representations and their relationship to mother-infant attachment. *Bulletin of The Menninger Clinic, 55*(4), 454-469.

Lewis, C., & Lamb, M. E. (2003). Fathers' influences on children's development: The evidence from two-parent families. *European Journal of Psychology Of Education - EJPE (Instituto Superior De PsicologiaAplicada)*, *18*(2), 212-228.

Mallan, K., Nothard, M., Thorpe, K., Nicholson, J., Wilson, A., Scuffham, P., & Daniels, L. (2014). The role of fathers in child feeding: perceived responsibility and predictors of participation. *Child: Care, Health And Development*, *40*(5), 715-722.

McBride, B. A., Dyer, W., & Laxman, D. J. (2013). Father Involvement and Student Achievement: Variations Based on Demographic Contexts. *Early Child Development And Care*, *183*(6), 810-826.

McQueen, K.A., Dennis, C.-L., Stremler, R. & Norman, C.D. (2011). A pilot randomized controlled trial of a breastfeeding self-efficacy intervention with primiparous mothers. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 40,* 35–46.

Merten, S., Dratva, J., & Ackermann-Liebrich, U. (2005). Do baby-friendly hospitals influence breastfeeding duration on a national level? *Pediatrics, 116*(5), e702–e708

Mikelson, K. (2008). He said, she said: Comparing mother and father reports of father involvement. *Journal of Marriage and Family, 70*(3), 613– 624.

National Institute of Child Health and Human Development Early Child Care Research Net- work. (1999). Chronicity of maternal depressive symptoms, maternal sensitivity, and child functioning at 36 months. *Developmental Psychology, 35,* 1297–1310.

Nord, C., Brimhall, D. & West, J. (1997). *Fathers' involvement in their children's schools.* Washington, DC, US Department of Education, Office of Educational Research and Improvement. Retrieved from www.nces.ed.gov

Palkovitz, R. J. (2002). Involved fathering and child development: Advancing our understanding of good fathering. In C. Tamis-LeMonda & N. Cabrera (Eds.), *Handbook of father-involvement* (pp. 119 – 140). Hillsdale, NJ: Erlbaum.

Palkovitz, R., & Copes, M. (1988). Changes in attitudes, beliefs and expectations associated with the transition to parenthood. *Marriage and Family Review, 12,* 183-199.

Palm, G. F., & Palkovitz, R. (1988). The challenge of working with new fathers: Implications for sup- port providers. *Marriage and Family Review, 12*(4), 357–376.

Pasley, K., Futris, T. G., & Skinner, M. L. (2002). Effects of Commitment and Psychological Centrality on Fathering. *Journal of Marriage and Family*, 64(1). 130. doi:10.2307/3599782

Pasley, K., Petren, R., & Fish, J. (2014). Use of Identity Theory to Inform Fathering Scholarship. *Journal of Family Theory & Review, 6*(4), 298-318.

Persad, M.D., & Mensinger J.L. (2008) Maternal breastfeeding attitudes: association with breastfeeding intent and socio-demographics among urban primiparas. *Journal of Community Health, 33*, 53–60.

Pleck, J. H. (2012). Integrating Father Involvement in Parenting Research. *Parenting: Science & Practice, 12*(2/3), 243-253.doi:10.1080/15295192.2012.683365

Pleck, J. H. (1997). Paternal involvement: Levels, sources, and consequences. In M. E. Lamb (ed.), *The role of the father in child development* (3rd ed., pp. 66–103). New York, NY: Wiley.

Pleck, J. H. (2010). Paternal involvement: Revised conceptualization and theoretical linkages with child outcomes. In M. E. Lamb (Ed.), The role of the father in child development (5th ed., pp. 58–93). Hoboken NJ: Wiley.

Pleck, J. H., & Masciadrelli, B. P. (2004). Paternal involvement in US residential fathers: Levels, sources and consequences. In M. E. Lamb (ed.), *The role of the father in child development* (4th ed.). Hoboken, NJ: Wiley.

Pougnet, E., Serbin, L. A., Stack, D. M., & Schwartzman, A. E. (2011). Fathers' Influence on Children's Cognitive and Behavioural Functioning: A Longitudinal Study of Canadian Families. *Canadian Journal of Behavioural Science*, *43*(3), 173-182.

Powell, K. & Baic, S. (2011). Partner support for breastfeeding: the need for health promotion. *Journal of Human Nutrition and Dietetics, 24* (4), 402–402.

Rempel, L. A., & Fong, G. T. (2005). Why Breastfeed? A longitudinal test of the reasons model among first-time mothers. *Psychology & Health*, *20*(4), 443-466.

Rempel, L. A., Moore, K. C. J., & Rempel, J. K. (In press). Relationships between types of father breastfeeding support and breastfeeding outcomes. *Maternal and Child Nutrition*.

Rempel, L., & Rempel, J. (2011). The Breastfeeding Team: The Role of Involved Fathers in the Breastfeeding Family. *Journal of Human Lactation*, *27*(2), 115-121.

Rempel, L. A., & Rempel, J. K. (2004). Partner influence on health behavior decision-making: Increasing breastfeeding duration. *Journal of Social & Personal Relationships*, *21*(1), 92-111.

Richaud de Minzi, M.C. (2006). Loneliness and depression in middle and late

childhood: The relationship to attachment and parental styles. *The Journal of Genetic Psychology, 167*(2), 189-210.

Robins, S., Ghosh, D., Rosales, N., Treiman, R., Taumoepeau, M., & Hood, M. (2014). Letter knowledge in parent-child conversations: differences between families differing in socio-economic status. *Frontiers in Psychology*, *5*1-11.doi:10.3389/fpsyg.2014.00632

Roopnarine, J. L., Fouts, H. N., Lamb, M. E., & Lewis-Elligan, T. Y. (2005). Mothers' and Fathers' Behaviors Toward Their 3- to 4-Month-Old Infants in Lower, Middle, and Upper Socioeconomic African American Families. *Developmental Psychology*, *41*(5), 723-732.

Rosenberg, M. (1979). *Conceiving the self.* New York: Basic Books.

Russell, G. (1983). *The changing role of fathers?* St. Lucia, QLD: University of Queensland Press. Committee

Roy, K., & Kwon, Y. (2007). Qualitative insights and methodological challenges: Next steps in research on low-income fathering. *Applied Development Science, 11*(4), 234–238.

Ryan, R. M., Martin, A., & Brooks-Gunn, J. (2006). Is One Good Parent Good Enough? Patterns of Mother and Father Parenting and Child Cognitive Outcomes at 24 and 36 Months. *Parenting: Science & Practice*, *6*(2/3), 211-228.

Sanderson, S., & Thompson, V. (2002). Factors associated with perceived paternal involvement in childrearing. *Sex Roles*, *46*(3-4), 99-111.

Schafer, J., & Graham, J. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*(2), 147-177.

Selin, H. (2014). *Parenting across cultures. [electronic resource]: childrearing, motherhood and fatherhood in non-Western cultures*. Dordrecht (Netherlands): Springer, [2014].

Seltzer, J. A., & Brandeth, Y. (1994). What fathers say about involvement with children after separation. *Journal of Family Issues, 15,* 49–77.

Shannon, J. D., Tamis-LeMonda, C. S., London, K., & Cabrera, N. (2002). Beyond rough and tumble: Low-income fathers' interactions and children's cognitive development at 24 months. *Parenting: Science and Practice, 2,* 77–104.

Shwalb, D. W., Shwalb, B. J., & Lamb, M. E. (2013). *Fathers in cultural context*. New York ; London : Routledge, 2013.

Smock, P. J., & Manning, W. D. (1997). Nonresident parents' characteristics and child support. *Journal of Marriage and the Family, 59,* 798 – 808.

Stringer, E. C., & Barnes, S. L. (2012). Mothering While Imprisoned: The Effects of Family and Child Dynamics on Mothering Attitudes. *Family Relations, 61*(2), 313-326.doi:10.1111/j.1741-3729.2011.00696.x

Stryker, S. (1968). Identity Salience and role performance: The relevance of symbolic interaction theory for family research. *Journal of Marriage and the Family, 30,* 558–564.

Stryker, S. (1989). Further developments in identity theory: Singularity versus multiplicity of self. In J. Berger, J. M. Zelditch, & B. Anderson (Eds.), *Sociological theories in progress: New formulations* (pp. 35– 57). Newbury Park, CA: Sage.

Stryker, S. (1987). Identity theory: Development and extensions. In K. Yardley & T. Honess (Eds.), *Self and identity: Psychosocial perspective* (pp. 89–103). London: Wiley.

Stryker, S., & Vryan, K. D. (2003). The Symbolic Interactionist Frame. In, *Handbook of Social Psychology* (p. 3).

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics.* Boston: Pearson Education.

Tamis-LeMonda, C., Shannon, J. D., Cabrera, N., & Lamb, M. (2004). Fathers and mothers at play with their 2-year-olds: Contributions to language and cognitive development. *Child Development, 75,* 1806–1820.

Teachman, J., Day, R., Paasch, K., Carver, K., & Call, V. (1998). Sibling Resemblance in Behavioral and Cognitive Outcomes: The Role of Father Presence. *Journal of Marriage and Family*, 60(4). 835.

Tran B. H., Hoa, D. P., &Målqvist, M. (2014). Fathers as supporters for improved exclusive breastfeeding in Viet Nam. *Maternal And Child Health Journal*, *18*(6), 1444-1453.

Tremblay, S., & Pierce, T. (2011). Perceptions of Fatherhood: Longitudinal Reciprocal Associations Within the Couple. *Canadian Journal of Behavioural Science, 43*(2), 99-110.doi:10.1037/a0022635

Troilo, J., & Coleman, M. (2012). Full-Time, Part-Time Full-Time, and Part-Time Fathers: Father Identities Following Divorce. *Family Relations, 61*(4), 601-614.doi:10.1111/j.1741-3729.2012.00722.x

Ullman, J. B. (2006). Structural Equation Modeling: Reviewing the Basics and Moving Forward. *Journal of Personality Assessment*, *87*(1), 35-50. doi:10.1207/s15327752jpa8701_03

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: Problem and remedies. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 56–75). Thousand Oaks, CA: Sage.

Widaman, K. F. (1993). Common Factor Analysis Versus Principal Component Analysis: Differential Bias in Representing Model Parameters?. *Multivariate Behavioral Research*, *28*(3), 263.

Winnicott, D. W. (1964). *The child, the family, and the outside world*. Harmondsworth, Eng. : Penguin Books, 1964.

World Health Organization (2014). *Global strategy for infant and young child feeding*. Retrieved 04/12/2014 from http://www.who.int/topics/breastfeeding/en/

WHO/ UNICEF (2003). *Global strategy for infant and young child feeding.* Geneva: World Health Organization. Retrieved 04/12/2014 from http://www.who.int/ child_adolescent_health/documents/9241562218/en/index.html

Yogman, M. W., Kindlon, D., & Earls, F. (1995). Father involvement and cognitive/ behavioral outcomes of pre- term infants. *Journal of the American Academy of Child and Adolescent Psychiatry, 343*, 58–66.

Zanna, M., & Rempel, J.K. (2007). Attitudes: a new look at an old concept. In R. H. Fazio and R. E. Petty (Ed.). *Attitudes: their structure, function, and consequences*. (pp. 7-15). New York: Psychology Press, 2007.

Zhang, D., Hsu, H., Kwok, O., Benz, M., & Bowman-Perrott, L. (2011). The Impact of Basic-Level Parent Engagements on Student Achievement: Patterns

Associated with Race/ Ethnicity and Socioeconomic Status (SES). *Journal of Disability Policy Studies*, *22*(1), 28-39.

Appendices

Appendix A: Baseline (Demographic information)

ID:

HUSBAND

QUESTIONNAIRE

BASELINE QUESTIONNAIRE

Interviewer

I. General Information

Province …….District (huyen): …….Commune: (xa)…….-->hhid (household id: 5 number: 1st district, 2nd and 3rdxa, 4th and 5th ID)

Investigator name.....

Investigation date: …….. ……..

	Question	HUSBAND
A1	Full name	……...
A3	Date of birth	……...
A5	Main occupation	Farmer 1 Staff 2 Househusband 3 Worker 4 Businessman 5 Other (Specify) 6 …… …….
A6	Education	Illiterate 1 Primary school 2 Secondary school 3 High school 4 College and university 5
	Nationality	Kinh 1 Other (Specify) 2 …… …….
A7	Number of children in the household?	

Appendix B: Housing and Environmental Questionnaire (SES)

	Question	Answer	
B1	Main material for **floor** *(interview and observe)*	Compact Soil floor	1
		Rough wooden planks, bamboo, palm	2
		Wooden floor, Polish wooden floor	3
		Rough bricks, cement, cement and sand mortar, breaking bricks	4
		Ceramic tiles, Granite tile, pottery tiles	5
		Other (specify) ……b1k…….....	99
B2	Main material for **roof** *(interview and observe)*	Leaves, straw roof	1
		Bamboo, tree-trunk	2
		Oilpaper	3
		Corrugated iron sheet	4
		Wood	5
		Asbestos cement roof	6
		Tile roof	7
		Concrete roof	8
		Other (specify) ……b2k…….....	99
B3	Main material for **wall** *(interview and observe)*	No wall	1
		Reed, palm, tree-trunk	2
		Soil wall	3
		Plywood, cardboard, reuse wood	4
		Concrete wall	5
		Stone, lateritic	6
		Burned, plastered brick wall,	7
		Slag bricks	8
		Unburned, plastered brick wall,	9
		Wooden planks	10
		Other (specify) ……b3k…….....	99
B5	Does your family currently have **bathroom**?	Yes	1
		No	2

	(interview and observe)		
B6	Which kind of **toilet** does your family currently use? (Even sharing with other households)	No toilet (Open defecation on rivers, ponds, gardens…)	0
		Single vault latrine	1
		Double vaults toilet	2
		Septic tank	3
		Pour flush toilet	4
		Ventilated improved pit latrine	5
		Biogas tank	6
		Flush toilet	7
		Overhang latrine/ Pour flush latrine	8
		Pit latrine	9
		Defecation in cattle's pen	10
		Other (specify) ……b6k…….....	99
B7	Which is the **water source** your family mainly uses for drinking and cooking? (One choice only)	Rain-water	1
		Tap-water	2
		Drilled-well water	3
		Deep well water	4
		Water from riverhead	5
		Water in lake, pond	6
		Water in river, stream	7
		Other (specify) ……b7k…….....	99
B8	Tool used **to store** drinking and cooking water? *(Multiple choices allowable)*	Barrel/ water jar b81	1
		Brick tank or concrete tank b82	2
		Metal tank b83	3
		Plastic tank b84	4
		Water filter/ water purifier b85	5
		Household doesn't use any tools to store water b86	6
		Other (specify) ……b86k…….....	99
B9	Which are the	Electricity b91	1

	energy sources often used by your family for **cooking**? *(*Multiple choices allowable*)* (Do not count if using for breeding)	Bottled liquid gas b92 2 Biogas b93 3 Paraffin oil b94 4 Peat, coal, charcoal b95 5 Firewood, straw, dry leaves, dry grass b96 6 Other (specify) 99 …….....b96k..... No b9 2
B10	Does your family **have**[…]? (Multiple choices allowable) (Only tick when the family say that facility is **still useable**)	Black and white television b10a 1 Color television b10b 2 Video player, DVD player b10c 3 Digital player b10d 4 Satellite player b10e 5 Different kinds of stereos b10f 6 Radio cassette b10g 7 Home phone b10h 8 Mobile phone b10i 9 Computer b10j 10 Refrigerator, freezer b10k 11 Air-conditioner b10k 12 Washing machine b10m 13 Water heater b10n 14 Bicycle b10o 15 Motorbike b10p 16 Boat, canoe, junk b10q 17 Car b10r 18

Appendix C: Relationship Satisfaction Measure (Relationship Quality)

Please indicate how true each of the following statements is about your relationship with your partner.

g1. I communicate well with my partner.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

g2. I feel that I really understand my partner.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

g3. I feel that my partner really understands me.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

g4. I am willing to share myself and my possessions with my partner.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

g5. I feel emotionally close to my partner.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

H1. I am extremely happy with my current romantic relationship.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

H2 . I have a very strong relationship with my partner.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

H3. I am perfectly satisfied in my relationship.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

J1. When we are dealing with an issue that is important to me, I feel confident that my partner will put my feelings first.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

J2. My partner is a thoroughly dependable person.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

j3. I am certain that my partner will always value and appreciate me, no matter what

happens.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

J4. I feel confident that my partner will never intentionally do anything to hurt me or jeopardize our relationship.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

J5. I feel that I can trust my partner completely.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

K1. I am very committed to maintaining my relationship.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

K2. I have made a firm promise to myself to do everything in my power to make my relationship work.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

K3. I do *not* feel any moral duty or obligation to continue my relationship.

not at all 0 1 2 3 4 5 6 7 8 9 10 *completely*

Appendix D: Attitudes toward Father-Infant Relationship (Affective Commitment toward father-infant interaction)

Please indicate how much you agree with the following statements.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
f1.	Fathers need to be part of a team with mothers to jointly care for their babies	1	2	3	4	5
f2.	It is not good for a father to spend a lot of time with his baby	1	2	3	4	5
f3.	It is important for fathers to pay attention to what their baby needs and respond in a way that is best for the baby	1	2	3	4	5
f4.	It is not good for fathers to hold and cuddle their babies a lot	1	2	3	4	5
f5.	My baby likes listening to me talk and sing	1	2	3	4	5
f6.	I like to help my baby explore and learn	1	2	3	4	5
f7.	It is fun to play with my baby	1	2	3	4	5
f8.	Fathers need to use strict and firm discipline with their babies	1	2	3	4	5
f9.	The most important thing that a father can do is to provide for his baby's basic physical needs	1	2	3	4	5

Appendix E: Father Breastfeeding Attitudes (Affective Commitment toward breastfeeding)

Please indicate how much you agree with the following statements.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
E11	Colostrum is milk that has been stuck in the breast for long time and needs to be squeezed out before putting the child to the breast	1	2	3	4	5
E12	It is best to only breastfeed the child only after actual milk comes in (to the breasts)	1	2	3	4	5
E13	Right after birth, the infant should drink/eat sugar, honey or herbal extracts before being put to the mother's breast	1	2	3	4	5
E21	Giving complementary food for the child before 6 months will make the child stronger	1	2	3	4	5
E22	During the first 6 months of age an infant should receive formula if possible	1	2	3	4	5
E23	During the first 6 months of age, mother's breast milk is enough to satisfy infant's need	1	2	3	4	5
E31	Feeding the child is responsibility of both wife and husband	1	2	3	4	5
E32	The husband should share housework with the wife to give more time for the wife to breast-feed	1	2	3	4	5
E33	The husband should sleep near the wife and the child to help the wife to breastfeed at night	1	2	3	4	5
E41	It will be easy for me to support my wife to breastfeeding	1	2	3	4	5

	exclusively for 6 months					
E42	I am able to work together with my wife to ensure that she can breastfeeding exclusively for 6 months no matter what happens	1	2	3	4	5
E51	My mother thinks that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	1	2	3	4	5
E52	My wife's parents think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	1	2	3	4	5
E53	My friends think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	1	2	3	4	5
E54	My co-workers think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	1	2	3	4	5
E55	My wife thinks that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	1	2	3	4	5
E61	If I am breastfeeding, but DO NOT give my infant water until s/he completes 6 months, my infant will be thirsty and hot.	1	2	3	4	5
E62	If DO NOT clean my infant's mouth out with water after breastfeeding, my infant will get thrush	1	2	3	4	5
E63	A mother who returns to work when her infant is 4 months old will have to use mainly formula to feed her infant.	1	2	3	4	5

Appendix F: Attitudes toward Father-Infant Relationship (Interactional Commitment toward father-infant interaction)

1 (*strongly disagree*) to 5 (*strongly agree*)

10.	t4b10_h_4m	My parents and my wife's parents think that I should be very involved with my baby.	1	2	3	4	5
11.	t4b11_h_4m	My friends and co-workers think that I should be very involved with my baby.	1	2	3	4	5
12.	t4b12_h_4m	My wife thinks that I should be very involved with my baby.	1	2	3	4	5

Appendix G: Attitudes toward Breastfeeding (Interactional Commitment toward breastfeeding)

1 (*strongly disagree*) to 5 (*strongly agree*)

15	My mother thinks that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	b5a_h
16	My wife's parents think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	b5b_h
17	My friends think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	b5c_h
18	My co-workers think that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	b5d_h
19	My wife thinks that I should feed my infant only breast milk, and no other food, water, or infant formula for the first 6 months.	b5e_h

Appendix H: Father infant attachment scale (Psychological Centrality)

Below is the information on parent attachment. You will see a list of statements related to father-infant attachment. After reading them carefully, for each one, please choose an answer (by circle the number) that is right to you situation.

In case you do notseeanychoice that canaccuratelyreflectyour situation, pleasechoosethe answer (number)whichis second best to your impression. If there is any unclear information, youcan ask the interviewer toexplain.

No	Attachment	Choices	Code
e1_h_4m	When I am caring for the baby, I get feelings of annoyance or irritation	Very frequently	1
		Frequently	2
		Occasionally	3
		Very rarely	4
		Never	5
E2_h_4m	When I am caring for the baby I get feelings that the child is deliberately being difficult or trying to upset me	Very frequently	1
		Frequently	2
		Occasionally	3
		Very rarely	4
		Never	5
E3_h_4m	Over the last two weeks I would describe my feelings for the baby as	Dislike	1
		No strong feelings towards the baby	2
		Slight affection	3
		Moderate affection	4
		Intense affection	5
E4_h_4m	Regarding my overall level of interaction with the baby I	Feel very guilty that I am not more involved	1
		Feel moderately guilty that I am not more involved	2
		Feel slightly guilty that I am not more involved	3
		I don’t have any guilty feelings regarding this	4
E5_h_4m	When I interact with the baby I feel:	Very incompetent and lacking in confidence	1
		Moderately incompetent and lacking in confidence	2
		Moderately competent and confident	3
		Very competent and confident	4
E6_h_4m	When I am with the baby I feel tense and anxious:	Very frequently	1
		Frequently	2
		Occasionally	3

		Almost never	4
E7_h_4m	When I am with the baby and other people are present, I feel proud of the baby:	Very frequently	1
		Frequently	2
		Occasionally	3
		Almost never	4
E8_h_4m	I try to involve myself as much as I possibly can PLAYING with the baby:	This is true	1
		This is untrue	2
E9_h_4m	When I have to leave the baby:	I usually feel rather sad	1
		I often feel rather sad	2
		I have mixed feelings of both sadness and relief	3
		I often feel rather relieved	4
		I usually feel rather relieved	5
e10_h_4m	When I am with the baby:	I always get a lot of enjoyment/satisfaction	1
		I frequently get a lot of enjoyment/satisfaction	2
		I occasionally get a lot of enjoyment/satisfaction	3
		I very rarely get a lot of enjoyment/satisfaction	4
e11_h_4m	When I am not with the baby, I find myself thinking about the baby:	Almost all the time	1
		Very frequently	2
		Frequently	3
		Occasionally	4
		Not at all	5
e12_h_4m	When I am with the baby:	I usually try to prolong the time I spend with him/her	1
		I usually try to shorten the time I spend with him/her	2
e13_h_4m	When I have been away from the baby for a while and I am about to be with him/her again, I usually feel:	Intense pleasure at the idea	1
		3Moderate pleasure at the idea	2
		Mild pleasure at the idea	3
		No feelings at all about the idea	4
		Negative feelings about the idea	5
e14_h_4m	I now think of the baby as:	Very much my own baby	1
		A bit like my own baby	2
		Not yet really my own baby	3
e15_h_4m	Regarding the things that we have had to give up because of	I find that I resent it quite a lot	1
		I find that I resent it a moderate amount	2
		I find that I resent it a bit	3

	the baby:	I don't resent it at all 4
e16_h_4m	Over the past three months, I have felt that I do not have enough time for myself or to pursue my own interests:	Almost all the time 1 Very frequently 2 Occasionally 3 Not at all 4
e17_h_4m	Taking care of this baby is a heavy burden of responsibility. I believe this is:	Very much so 1 Somewhat so 2 Slightly so 3 Not at all 4
e18_h_4m	I trust my own judgment in deciding what the baby needs:	Almost never 1 Occasionally 2 Most of the time 3 Almost all the time 4
e19_h_4m	Usually when I am with the baby:	I am very impatient 1 I am a bit impatient 2 I am moderately patient 3 I am extremely patient 4

Appendix I: Activities with infant in the past month (Role performance in regard to father-infant interaction)

0 (*never*) to 4 (*very frequently*)

No	**Activities in the past month**	
1	Work together as a couple to take care of your baby.	d1_h
2	Buy things that your baby needs.	d2_h
3	Give your baby a bath.	d3_h
4	Change your baby's diaper.	d4_h
5	Feed your baby.	d5_h
6	Stroke, massage, or pat your baby	d6_h
7	Hold your baby.	d7_h
8	Kiss your baby.	d8_h
9	Sing or talk to your baby.	d9_h
10	Try to soothe and comfort your baby.	d10_h
11	Take your baby for a walk outside.	d11_h
12	Do a special repeated activity (e.g., play a repeat game).	d12_h
13	Do things to make your baby smile or laugh (e.g., tickling, making faces, peek-a-boo, funny noises).	d13_h
14	Play physical games (e.g., baby exercises, bouncing, lift in the air, dancing).	d14_h
15	Copy your baby's faces, noises, or actions.	d15_h
16	Play during bath time.	d16_h
17	Entertain your baby with baby toys (e.g., rattle, ball).	d17_h
18	Dress your baby.	d18_h
19	Read to your baby.	d19_h
20	Try to teach your baby something new.	d20_h
21	Have your baby sleep with you (e.g., fall asleep in your arms, cuddle or rock your baby to sleep)	d21_h
22	Take care of your baby when your baby is sick	d22_h
23	Bring your baby to health check-ups and immunizations	d23_h

Appendix J: Activities in the past month for breastfeeding (Role performance in regard to breastfeeding support)

0 (*never*) to 4 (*very frequently*)

No	Activities in the past month	
1	Discuss or negotiate with your partner about how long to breastfeed	c1_h
2	Make it easy for your partner to breastfeed while entertaining company or visiting others (e.g., entertain company while your partner breastfeeds or join your partner in a private place at a social event)	c2_h
3	Discuss with your partner ideas for trying to solve breastfeeding problems to make breastfeeding work better	c3_h
4	Help out with or take care of other childcare tasks with the baby (e.g., rocking, soothing, responding to the baby's cries, change diapers)	c4_h
5	Act attentively towards your partner during breastfeeding (e.g., bring your partner food or drink, a book, or help make your partner comfortable for breastfeeding)	c5_h
6	Give something up in order to make breastfeeding easier (e.g., be willing to set aside hobbies or preferred activities, take time off work)	c6_h
7	Respond sensitively and positively to sexual issues (e.g., understand your partner's feelings about not having sexual relations more than she wants, understand her feelings about touching her breasts, be flexible in sleeping arrangements and allow the baby to sleep in your bed)	c7_h
8	Share household chores or take care of the tasks that are normally your partner's responsibility in order to free up your partner's time and energy (e.g. clean the house, do the laundry)	c8_h
9	Learn more about breastfeeding by reading books, articles, and internet information on breastfeeding	c9_h
10	Tell your partner your opinion about exclusive breastfeeding	c10_h
11	Speak up in support of your partner or defend exclusive breastfeeding when someone makes a negative breastfeeding comment	c11_h
12	Help your partner get assistance from others for solving breastfeeding problems or improving breastfeeding (e.g., by asking others for advice, getting professional help, or going along to get help)	c12_h
13	Help out with breastfeeding at night	c13_h
14	Care for your baby during and after breastfeeding is done (e.g., change the diaper)	c14_h
15	Praise your partner for breastfeeding and let her know that what she is doing is a beautiful, worthwhile thing	c15_h
16	Physically help with breastfeeding related activities (e.g., check the baby's latch or position)	c16_h
17	Listen to and encourage your partner when she is feeling frustrated or discouraged about breastfeeding	c17_h
18	Remind your partner of the benefits that breastfeeding has for her or	c18_h

	for your baby (e.g., it saves money, it is easier than bottle feeding, it is better for the baby)	
19	Show pleasure and satisfaction while your partner is breastfeeding (e.g., watch, smile)	c19_h
20	Be patient and understanding of the time it takes to breastfeed and don't get upset if the other housework is not done	c20_h
21	Show your comfort with breastfeeding in public (e.g., shopping centers, restaurants) and help her feel comfortable too	c21_h
22	Pay attention to how much and how your partner wants you to participate in breastfeeding	c22_h
23	Try to improve your partner's health and nutrition (e.g., prepare nutritious meals, help avoid foods as agreed)	c23_h
24	Encourage your partner to breastfeed as a way to calm the baby	c24_h
25	Tell your partner that you value and support her mothering decisions and intuitions around breastfeeding	c25_h
26	Accompany your partner to a health check-up and stay with her in the examination room	c26_h
27	Go together with your partner to events outside the home (e.g. entertainment events, weddings, visiting friends or relatives)	c27_h
28	Buy (or ask a relative) to buy formula milk	c28_h
29	Talk with grandparents and household members about the importance of exclusive breastfeeding	c29_h
30	Let your partner know that breastfeeding does not make her less attractive	c30_h

Appendix K: Developmental Milestones Checklist – II (Infants' development)

DMC-II Form Version 2013-09-24 **Nickname of the child:** _____

Q	Information requested	Data
1.	Child's ID number	|___|___|___|___|___|
2.	Date of the interview / observation	|____|____| / |____|____| / 20|____|____| dd m m y y
3.	Person doing the interview / observation	|___|___| **Code**
4.	Respondent's relationship to the child **1 = Mother, 2 = Father, 3 = Other adult, family member ≥15 years of age**	|___| **Code**

Codes for theResponse column: ** **0 = respondent said child has not yet started doing the activity** **1 = respondent said child has been able to do the activity in the past 4 weeks but not continually** **2 = respondent said child has been able to do the activity continually for the past 4 weeks** **9 = mother/caregiver does not know / does not remember / has not observed** **The codes are different for certain questions concerning language	**Codes for theObservationcolumn :** **0 = interviewer observed that the child cannot do the activity** **1 = interviewer observed that the child can do the activity** **9 = not observed or the child refused**

	Response	**Observation**
5. LOCOMOTOR: START WITH 5.12		
Head Control		
5.1 If you observe the child holding his or her head erect without support for more than 5 seconds, ask the		

mother how long the child has been able to do this. If you observe the mother supporting the child's head continuously, then ask the mother: *Are you ever able to leave the child's head unsupported? How long can your child support his/her own head?*

5.1	Holds head erect for 5 seconds	**If 0, 1, or 2 score 5.13 to 5.22 = 0 points, continue with 6.6**	5.1.1|____| Code	5.1.2|____| Code

5.2 If you observe the child holding his or her head erect without support and turning his or her head to the right and to the left, ask the mother how long the child has been able to do this. If you observe the mother supporting the child's head, ask the mother: *Have you observed your child hold his or her head erect unsupported and turn his or her head to the left and to the right?*

5.2	Controls the head	**If 1 or 2, score 5.1 = 2 points, continue with 6.6** **If 0, continue with 5.1**	5.2.1|____| Code	5.2.2|____| Code

Sitting

5.3-5.4 Ask: *What happens when you leave the child to sit alone on the floor? How does he/she sit?* ***Additional probes:*** *Have you observed him/her sit upright by his/herself? Have you observed him/her leaning on anything? Have you observed him/her sitting upright on your lap while leaning on you? Have you observed him/her sitting upright without leaning on his/her hands or on anything?*

5.3	Sits supported	**If 1 or 2, score 5.1 to 5.2 = 2 points, continue with 6.6** **If 0, continue with 5.2**	5.3.1|____| Code	5.3.2|____| Code
5.4	Sits alone on the floor	**If 1 or 2, score 5.1 to 5.3 = 2 points, continue with 6.6** **If 0, continue with 5.3**	5.4.1|____| Code	5.4.2|____| Code

Standing

5.5-5.6 Ask: *When you hold the child upright, what does he/she do? What does he/she do with his/her feet?* ***Additional probes:*** *Have you observed him/her try to place his/her feet flat on your lap or on the floor and push his/her feet into the floor? Have you observed him/her stand up while you're holding him/her?*

5.5	Pushes down with feet on the floor when held	**5.5.1**|____| **Code**	**5.5.2**|____| **Code**
5.6	Stands when held up **If 1 or 2, score 5.5 = 2 points, continue with 5.4 If 0, continue with 5.5, 5.4**	**5.6.1**|____| **Code**	**5.6.2**|____| **Code**
5.7 Ask: *What happens when your child is sitting on the floor and wants to stand up? Have you observed him/her use a chair or another object to pull him/herself up to a standing position?*			
5.7	Pulls self into a standing position while holding on to an object	**5.7.1**|____| **Code**	**5.7.2**|____| **Code**
5.8-5.9 Ask: *What happens when you place your child in a standing position? What happens when you let go?* ***Additional probes:*** *Have you seen him/her standing up? Have you seen him/her standing while holding onto a chair or something else? Have you seen him/her standing up without holding onto anything?*			
5.8	Stands holding on to furniture or object 10 seconds	**5.8.1**|____| **Code**	**5.8.2**|____| **Code**
5.9	Stands alone 10 seconds **If 1 or 2, score 5.1 to 5.8 = 2 points, continue with 5.13 If 0, score 5.13 to 5.22 = 0 points, continue with 5.8, 5.7, 5.6**	**5.9.1**|____| **Code**	**5.9.2**|____| **Code**

	Response	**Observation**
Moving		
5.10-5.12 Ask:*Does your child move around? What happens when your child wants something that is not within reach? How does he/she move to get it?* ***Additional probes:*** *Have you observed your child moving on all fours? Have you observed your child moving forward on his/her feet when you are holding his/her hands? Have you observed your child walking on his/her own?*		
5.10	Crawls 3 continuous movements without stomach on the	**5.10.1**|____|	**5.10.2**|____|

	ground	Code	Code
5.11 START	Walks when hands are held	5.11.1|____| Code	5.11.2|____| Code
5.12	Walks alone 5 steps **If 1 or 2, score 5.1 to 5.11 = 2 points, continue with 5.13** **If 0, continue with 5.11, 5.10, 5.9**	5.12.1|____| Code	5.12.2|____| Code
5.13 Ask: *If your child wants to get into a low chair, what does he/she do? Have you observed him/her climbing up by him/herself? How does he/she do it?*			
5.13	Climbs onto a low chair	5.13.1|____| Code	5.13.2|____| Code
5.14 Ask: *If your child wants to get out of a low chair, what does he/she do? Have you observed him/her climbing out of the chair by him/herself?*			
5.14	Climbs out of a low chair	5.14.1|____| Code	5.14.2|____| Code
5.15-5.16 Ask:Ask the mother: *What happens when your child tries to walk out of a house when there is a step? Have you seen him/her go down the step? How does he/she do it?* ***Additional probes:*** *Have you seen him/her sit down on his/her bottom or on his/her knees to go down the step? Does he/she hold onto something? Have you seen him/her go down the step without touching anything with his/her hands?*			
5.15	Can go down one step while standing with support	5.15.1|____| Code	5.15.2|____| Code
5.16	Can go down one step while standing without support	5.16.1|____| Code	5.16.2|____| Code
5.17 Ask: *Have you seen your child run?*			
5.17	Runs	5.17.1|____| Code	5.17.2|____| Code
5.18 Ask: *Have you observed your child jump with both feet leaving the ground at the same time? Have you observed your child do this without holding on to anything?*			
5.18	Jumps (both feet leaving the ground at the same time)	5.18.1|____| Code	5.18.2|____| Code

5.19 Ask: *Have you observed your child try to kick a ball? What happens? Have you seen his/her foot make solid contact with the ball? Have you observed him/her kick the ball without falling?*			
5.19	Kicks ball while standing	**5.19.1**|____| **Code**	**5.19.2**|____| **Code**
5.20 Ask: *Have you observed your child try to throw a ball? What happens? Does it go in the right direction?*			
5.20	Throws ball	**5.20.1**|____| **Code**	**5.20.2**|____| **Code**
5.21 Ask: *Have you observed your child try to walk backwards? What happens? Have you observed him/her take 5 steps backwards without losing balance?*			
5.21	Can walk backwards 5 steps	**5.21.1**|____| **Code**	**5.21.2**|____| **Code**
5.22 Ask: *Have you observed your child try to stand on one leg? What happens? Have you observed him/her stand on one leg for at least ten seconds?*			
5.22	Can stand on one leg for at least 10 seconds	**5.22.1**|____| **Code**	**5.22.2**|____| **Code**
6. FINE MOTOR: START WITH 6.6			
Watching and reaching			
6.1-6.3 Ask: *When you hold a cloth or a toy in front of the child's face what does he/she do?* ***Additional probes:*** *Have you seen your child watch the object and follow it with his/her eyes? Have you seen your child reach out his/her arm/hand to try to get the object? Have you seen the child manage to take the object?*			
6.1	Watches a moving item in front of face **If 0, 1, or 2 score 6.7 to 6.10 = 0 points, continue with 7.1**	**6.1.1**|____| **Code**	**6.1.2**|____| **Code**
6.2	Reaches out for objects even if child **If 1 or 2, score**	**6.2.1**|____|	**6.2.2**|____|

	doesn't manage to grasp it	**6.1 = 2 points, continue with 6.7** **If 0, score 6.7 to 6.10 = 0 points, continue with 6.1**	**Code**	**Code**
6.3	Reaches out and grasps objects	**If 1 or 2, score 6.1 to 6.2 = 2 points, continue with 6.7** **If 0, continue with 6.2**	**6.3.1**|____| **Code**	**6.3.2**|____| **Code**
			Response	**Observation**
Picking things up				
6.4-6.5 Ask: *If there is a small toy or an object on the floor or table in front of the child, what does he/she do?* ***Additional probes:*** *Have you seen him/her pick it up? How? Does he/she use one hand or two?*				
6.4	Picks up small objects in any way		**6.4.1**|____| **Code**	**6.4.2**|____| **Code**
6.5	Picks up small objects using one hand rather than two	**If 1 or 2, score 6.1 to 6.4 = 2 points, continue with 6.7**	**6.5.1**|____| **Code**	**6.5.2**|____| **Code**

		If 0, continue with 6.4, 6.3		
6.6 Ask: *If there are small grains on the ground in front of the child, how does he/she pick them up?* ***Additional probes****: Have you observed your child pick up small grains using only his/her thumb and forefinger?*				
6.6	Picks grains with thumb and forefinger	**If 1 or 2, score 6.1 to 6.5 = 2 points, continue with 6.7** **If 0, continue with 6.5**	**6.6.1**|____| **Code**	**6.6.2**|____| **Code**
Writing				
6.7-6.9 Ask: *Have you observed your child holding a pen or pencil? What does your child do when you give him/her a pen? How does he/she hold it? What does he/she do with it?* ***Additional probes:*** *Have you observed him/her move it along the floor or a table as if writing or drawing? Have you observed your child scribble on paper?*				
6.7	Holds a pen in any way with the intent to write		**6.7.1**|____| **Code**	**6.7.2**|____| **Code**
6.8	Holds a pen between finger and thumb (like an adult)		**6.8.1**|____| **Code**	**6.8.2**|____| **Code**
6.9	Scribbles with a pen		**6.9.1**|____| **Code**	**6.9.2**|____| **Code**
Opening				
6.10 Ask: *What does your child do when he/she wants to go through a closed door?* ***Additional probes:*** *Have you observed him/her push the door open on his/her own without any help?*				
6.10	Opens a door that requires pushing		**6.10.1**|____| **Code**	**6.10.2**|____| **Code**
TOTAL MOTOR SCORE = SUM OF RESPONSE ITEMS 5.1.1 –			|___|___|	

START

6.10.1			

7. LANGUAGE: START WITH 7.1

Pre-speech language

7.1 Ask: *What does your child do when there is a loud sound like a shout or a loud knock?*

START

7.1	Startled by loud noises	**7.1.1**|____| **Code**	**7.1.2**|____| **Code**

7.2-7.3:Observe the child as you have opportunity during the interview. Take note of the child's vocalizations. If you hear the child making vowel sounds and/or syllable sounds, ask the mother how long the child has been making those sounds. If you do not hear the child making any sounds, ask the mother: *Does your child make any sounds? What sounds does he/she make?* ***Additional probes:*** *If you talk to her and say "aaaaaa" what does she say? Does she say it back to you? If you talk to her and say "bababa" what does she say? Does she say it back to you?*

7.2	Repeats vowels in strings (ex :aaaaaa)	**7.2.1**|____| **Code**	**7.2.2**|____| **Code**
7.3	Repeats syllables in strings (ex : ma mama)	**7.3.1**|____| **Code**	**7.3.2**|____| **Code**

7.4 Ask: *If you stretch out your arm to ask your child for something, does he/she give you something? Even if it's not what you asked for, does the child understand the gesture reaching out to ask for something?*

7.4	Understands the gesture reaching out to ask for something	**7.4.1**|____| **Code**	**7.4.2**|____| **Code**

7.5 Ask: *When your child wants to show you something, what does he/she do? When your child wants something, how does he/she tell you? When your child wants you to come to him/her, what does he/she do? Does he/she use any gestures to communicate to you?*

7.5	Uses gestures to communicate	**7.5.1**|____| **Code**	**7.5.2**|____| **Code**

Understanding words

7.6 Ask: *What does your child do when you say 'no'? Does he understand when you tell him no?*

7.6	Understands when told "no"	**7.6.1**|____|	**7.6.2**|____|

		Code	Code
7.7 Ask: *What does your child do when you say "come here"? or "go away"? Does he/she understand when you tell him/her to do something simple?*			
7.7	Understands simple instructions like "come here" or "go away"	7.7.1|____| Code	7.7.2|____| Code

		Response	Observation
7.8 Ask: *How many objects can your child identify? If you ask your child to bring his shoes, does he go and get them? What else does your child know? Anything in the kitchen? If you ask your child to show you his spoon, does he know? His cup? Among his clothes? Anything else?* Write the objects below then count the number of objects that the mother reports the child can identify.			
1	3	5	7	9	11
2	4	6	8	10	
7.8	Identifies familiar objects **0 = 0 (no objects)** **1 = 1-10 objects** **2 = More than 10 objects**	7.8.1|____| Code	7.8.2|____| Code
7.9 Ask: *Can your child identify body parts? For example, if you ask "where's your eyes?" can he/she point to his/her eyes? What about his/her hair, nose, fingers, mouth, ears, hands, teeth, feet, head, anything else?* Write the body parts below then count the number of body parts the mother reports the child can identify.			
1	2	3	4	5	6
7.9	Identifies body parts **0 = 0 (no body parts)** **1 = 1-5 body parts** **2 = More than 5 body parts**	7.9.1|____| Code	7.9.2|____| Code

Using Words

7.10 Ask: *When your child sees a goat, does he/she make the "mee" sound that a goat makes? When he/she sees a dog, does he/she make the "wowo" sound that a dog makes? Does he/she make the sound a car makes? Any other sounds?*

7.10	Imitates animal and other sounds, e.g., mee for a goat, moo for a cow, vroom for car	**7.10.1**|____| **Code**	**7.10.2**|____| **Code**

7.11-7.14 Ask: *Have you heard your child say any words? Even if he/she doesn't get the sound of the word right, does he/she say any sounds to always mean the same thing? For example, if the child sees a chicken he/she says "ki" or if the child wants to go to the toilet he/she says "ca." Or, the child might also pronounce the word well. How many words does he/she say? Any words for animals? What words? Any words for things you have in the kitchen or around the house? What words? Any words for things that are outside? Any words for people? Any foods? Any clothes? Any body parts?* Write the words below then count the number of words the mother tells you that the child says.

1	10	19	28	**37**	**46**
2	11	20	29	**38**	**47**
3	12	21	30	**39**	**48**
4	13	22	31	**40**	**49**
5	14	23	32	**41**	**50**
6	15	24	33	**42**	**51**
7	16	25	34	**43**	
8	17	26	35	**44**	
9	18	27	36	**45**	

7.11	Uses one definite word	**7.11.1**|____| **Code**	**7.11.2**|____| **Code**
7.12	Says more than 3 or 10 words **0 = 0-2 words** **1 = 3-10 words** **2 = More than 10 words**	**7.12.1**|____| **Code**	**7.12.2**|____| **Code**

7.13	Says more than 50 words **0 = 0-50 words** **1 = More than 50 words**	**7.13.1**|____| **Code**	**7.13.2**|____| **Code**

		Response	**Observation**
7.14-7.15 Ask: *If your child wants something, how does he/she say it? What if she doesn't want you to do something? Have you heard him/her say two words together to try to make a sentence? Have you heard him/her say three words together to try to make a sentence?*			
7.14	Uses two-word combinations	**7.14.1**|____| **Code**	**7.14.2**|____| **Code**
7.15	Uses three-word combinations	**7.15.1**|____| **Code**	**7.15.2**|____| **Code**
7.16 Ask: *How many objects can your child name? If you point to his shoes and ask your child "what's that" what does he say? If you point to a cup and say "what's that" what does he say? Anything else?*			
1	3	5	7	**9**	**11**
2	4	6	8	**10**	
7.16	Names familiar objects **0 = 0 (no objects)** **1 = 1-10 objects** **2 = More than 10 objects**	**7.16.1**|____| **Code**	**7.16.2**|____| **Code**
TOTAL LANGUAGE SCORE = SUM OF RESPONSE ITEMS 7.1.1 – 7.16.1		|___|___|	
8. PERSONAL/SOCIAL: START WITH 8.1			
Reaction to others			
START **8.1** Ask: *When you talk to your child, what does he/she do? Does he/she look at you and show interest in you?*			

8.1	Regards person : fleeting	**8.1.1**|____| **Code**	**8.1.2**|____| **Code**
8.2 Ask: *If someone else is holding the baby and you (the mother) are talking while moving around the room, how will the baby react? Have you seen the baby try to search to find you and follow you with his/her eyes?*			
8.2	Follows a moving person with eyes	**8.2.1**|____| **Code**	**8.2.2**|____| **Code**
8.3-8.4 Ask: *When you talk to your child what does he/she do?* ***Additional probes:*** *Have you observed him/her smile in response? Have you observed him/her make sounds to talk back to you?*			
8.3	Smiles	**8.3.1**|____| **Code**	**8.3.2**|____| **Code**
8.4	Vocalizes when talked to	**8.4.1**|____| **Code**	**8.4.2**|____| **Code**
Recognition of others			
8.5 Ask: *When your child is upset and you try to comfort him/her, what does he/she do?*			
8.5	Recognizes the mother, the child is comforted by the mother's presence	**8.5.1**|____| **Code**	**8.5.2**|____| **Code**
8.6 Ask: *Does your child know you? How do you know your child knows you?* ***Additional probes:*** *Does your child look for you when he/she hears your voice?*			
8.6	Recognizes the mother, turns and looks for mother when seeing her or hearing her voice	**8.6.1**|____| **Code**	**8.6.2**|____| **Code**
8.7 Ask: *Does your child know other people in the family? How do you know that?*			
8.7	Knows strangers from familiar people	**8.7.1**|____| **Code**	**8.7.2**|____| **Code**
8.8 Ask: *What does your child do when his/her father or another close family member comes back home to him/her? How does he/she react to that person?*			
8.8	Reaches out for familiar people	**8.8.1**|____| **Code**	**8.8.2**|____| **Code**
8.9 Ask: *What happens when you leave your child with a family member? How does he/she react?*			

8.9	Goes happily with people he knows	**8.9.1**|____| **Code**	**8.9.2**|____| **Code**
8.10 Call the child's name and observe his/her reaction. If the child turns his/her head and looks at you when you call his/her name, ask the mother how long the child has done this. If the child does not react, ask the mother *If you call your child's name, what does he/she do? Does he/she react by looking at you or does he/she give no reaction?* Ask the mother to try it.			
8.10	Reacts to own name	**8.10.1**|____| **Code**	**8.10.2**|____| **Code**

		Response	**Observation**
Play			
8.11-8.13 Ask: *What happens when your child is playing and other children are around?* ***Additional probes:*** *Have you seen the child look at what the other children are doing and show an interest in them? Have you seen him/her play next to other children? Have you seen him/her join in games and play together with other children?*			
8.11	Shows an interest in what others are doing	**8.11.1**|____| **Code**	**8.11.2**|____| **Code**
8.12	Watches others and plays next to them	**8.12.1**|____| **Code**	**8.12.2**|____| **Code**
8.13	Joins other children in play	**8.13.1**|____| **Code**	**8.13.2**|____| **Code**
Dressing			
8.14 Ask: *What does your child do when you want to put a blouse or a shirt on him/her? Does your child reach out his/her hand to help put his/her arm into the sleeve?*			
8.14	Tries to raise or reach out hand to help the person who is	**8.14.1**|____	**8.14.2**|____| **Code**

	putting on his/her shirt or blouse	| Code	
8.15-8.16 Ask: *Does your child ever take his/her clothes off on his/her own?*			
8.15	Undresses self partially	8.15.1|____ | Code	8.15.2|____| Code
8.16	Undresses self completely	8.16.1|____ | Code	8.16.2|____| Code
8.17-8.18 Ask: *How does your child get dressed? How much help do you give?* ***Additional probes:*** *Does your child get dressed alone without any help? Does he/she get dressed alone but ask you for help, for example, with his/her buttons or zipper?*			
8.17	Dresses self with minimal assistance	8.17.1|____ | Code	8.17.2|____| Code
8.18	Dresses self without any assistance	8.18.1|____ | Code	8.18.2|____| Code
Eating and drinking			
8.19-8.21 Ask: *How does your child drink liquid? Does your child drink anything from a cup? How? How much help does the child need?*			
8.19	Takes liquids from cups when held to lips	8.19.1|____ | Code	
8.20	Drinks from a cup with assistance	8.20.1|____ | Code	
8.21	Can manage a cup well	8.21.1|____ | Code	
8.22-8.25 Ask: *Tell me about mealtimes. Does your child feed himself? If yes, what does he use, his hands or a spoon? Does he eat in a clean way or does some of the food spill?*			
8.22	Uses hands to feed self : spillage	8.22.1|____ | Code	

8.23	Uses hands to feed self : no spillage	**8.23.1**|____| **Code**	
Toilet Training			
8.24 Ask:*How long before you have to change your child's undergarments? Can your child stay for an hour without peeing on themselves?*			
8.24	Usually stays dry and clean for up to an hour	**8.24.1**|____| **Code**	**8.24.2**|____| **Code**
8.25 Ask: *Does your child indicate when he/she has peed on him/herself and he/she is wet? For example, does your child cry, get fussy, or tell you when he/she is wet?*			
8.25	Indicates when wet	**8.25.1**|____| **Code**	**8.25.2**|____| **Code**
8.26-8.27 Ask: *What does your child do when he/she wants to pee? **Additional probes:** Does he/she cry or get fussy or point to the toilet? Does he/she tell you with words? Usually or only sometimes?*			
8.26	Usually indicates (in any way) when wants to pee	**8.26.1**|____| **Code**	**8.26.2**|____| **Code**
8.27	Usually tells with words when wants to pee	**8.27.1**|____| **Code**	**8.27.2**|____| **Code**
8.28 Ask: *Does your child ever soil him/herself? Or is he/she clean all of the time?*			
8.28	Bowel and bladder control complete, rarely dirty by day	**8.28.1**|____| **Code**	
TOTAL PERSONAL-SOCIAL SCORE = SUM OF RESPONSE ITEMS 8.1.1 – 8.28.1		|___|___|	
TOTAL DEVELOPMENTAL SCORE = SUM OF MOTOR SCORE, LANGUAGE SCORE AND PERSONAL-SOCIAL SCORE		|___|___|___|	

9	Do you have any concerns regarding the child's growth and development? 1 **= Yes, 0 = No** If « yes », ask her to explain her concerns (briefly) and write them below :	9|____| **Code**

Comments/observations: _____

_____

	Data Collector	Supervisor/Quality control agent	Data entry #1	Data entry #2
Code/Initials	|__|__|/_____	|__|__|/_____	|__|__|/___	|__|__|/_____
Date	|__|__| / |__|__| / 20|__|__|	|__|__| / |__|__| / 20|__|__|	|__|__| / |__|__| / 20|__|__|	|__|__| / |__|__| / 20|__|__|